

SUBCHAPTER 4

NONRESIDENTIAL, HIGH-RISE RESIDENTIAL, AND HOTEL/MOTEL OCCUPANCIES—MANDATORY REQUIREMENTS FOR LIGHTING SYSTEMS AND EQUIPMENT

SECTION 130 – LIGHTING CONTROLS AND EQUIPMENT—GENERAL

- (a) Except as provided in Subsection (b), the design and installation of all lighting systems and equipment in nonresidential, high-rise residential, hotel/motel buildings, and outdoor lighting subject to Title 24, Part 6, shall comply with the applicable provisions of Sections 131 through 139. All lighting controls and equipment shall be installed in accordance with the manufacturer's instructions.¹
- (b) **Indoor Lighting in High-rise Residential Living Quarters Dwelling Units and Hotel/Motel Guest Rooms.** The design and installation of all lighting systems and equipment in high-rise residential living quarters and in hotel/motel guest rooms shall comply with the applicable provisions of section 150(k).

~~EXCEPTION to Section 130 (b): Up to 10 percent of the guest rooms in a hotel/motel need not comply².~~

- (c) **Outdoor Lighting for High-rise Residential Dwelling Units and Hotel/Motel Guest Rooms.** Outdoor lighting that is permanently attached to the building, and is separately controlled from the inside of a high-rise residential dwelling unit or guest room shall comply with Section 150(k)12.³

- (ed) **Luminaire power.** Luminaire wattage ~~incorporated into the installed lighting power~~ shall be determined ~~in accordance with the following criteria as follows:~~

1. The wattage of ~~incandescent or tungsten halogen~~ luminaires with medium screw baseline voltage sockets lamp holders and not containing permanently installed ballasts or transformers shall be the maximum relamping rated wattage of the luminaire, as listed on a permanent, pre-printed, factory-installed label, as specified by UL 1598. For luminaires designed to accommodate a variety of trims or modular components that allow the conversion between screw-based and pin-based sockets without changing the luminaire housing or wiring, the highest wattage designated by the correlated marking on a permanent, pre-printed, factory-installed label on the luminaire housing shall be used.⁴

The permanent, pre-printed, factory-installed label shall not consist of peel-off or peel-down layers or other methods which allow the rated wattage to be changed after the luminaire has been shipped from the manufacturer.⁵

EXCEPTION to Section 130(e)(1): The wattage of recessed luminaires with screw-base lamp holders shall be the larger of the relamping rated wattage of the luminaire specified in Section 130(e)(1) or the following:

- A. 60 watts for luminaires with housings or trims with an aperture diameter of greater than or equal to 4 inches and less than 5 inches; or
 - B. 75 watts for luminaires with housings or trims with an aperture diameter of greater than or equal to 5 inches.
2. The wattage of luminaires with permanently installed or remotely installed ballasts shall be the operating input wattage of the rated lamp/ballast combination published in manufacturer's catalogs based on independent testing lab reports as specified by UL 1598. The wattage of luminaires that accommodate a range of wattages without changing the luminaire housing, ballast, or wiring shall be the maximum operating input wattage of the luminaires.⁶
 3. The wattage of line-voltage lighting track and plug-in busway which allows the addition or relocation of luminaires without altering the wiring of the system shall be determined by one of the following methods, or by a method approved by the Executive Director:⁷
 - A. The wattage of line voltage busway and track rated for more than 20 amperes shall be the total volt-ampere rating of the branch circuit feeding the busway and track.

B. The wattage of line voltage busway and track rated for 20 amperes or less shall be determined by one of the following methods:

- i. The volt-ampere rating of the branch circuit feeding the ~~luminaires-track or busway, or~~⁸
- ii. The higher of the volt-ampere rating of ~~or~~ an integral current limiter controlling the ~~luminaire~~ track or busway, or 12.5 watts per linear foot of track or busway, provided that the integral current limiter complies with Section 119(I); or⁹

the higher of the maximum relamping rated wattage of all of the luminaires included in the system, listed on a permanent factory installed label, as specified by UL 1574, or 45 Watts per linear foot¹⁰

- iii. The sum of the volt-ampere (VA) rating of all of the circuit breakers in a dedicated track-limiting panel certified by Underwriters Laboratories (UL) or other testing/rating laboratories recognized by the International Code Council (ICC). The circuit breakers shall be UL listed branch circuit breakers, or other listed circuit breakers if required by the jurisdiction having authority. The track-limiting panel shall meet all of the following:
 - a. Have a NEMA 1 metal enclosure with a hinged door with clearly marked VA limits for each breaker on the interior of the door; and
 - b. Have only track lighting circuits routed through the panel; and
 - c. Be permanently installed in an electrical equipment room; and
 - d. Be labeled "Circuit breakers in this track-limiting panel shall be replaced with the same or lower amperage originally installed. Circuit breakers shall not be added to this panel. Installing additional breakers or replacing existing breakers with higher amperage breakers will void the track limiting panel listing and require re-submittal and re-certification of California Title 24, Part 6 compliance documentation."¹¹

4. The wattage of the following low-voltage lighting systems, ~~lighting track, cable conductor, rail conductor, and other low voltage flexible lighting systems, which allows the addition or relocation of luminaires without altering the wiring of the system,~~ shall be the rated wattage of the transformer(s) supplying the system, listed on a permanent, pre-printed, factory-installed label, as specified by UL 1574 or UL 1598:

1-A. Track, cable conductor, rail conductor, and other low voltage flexible lighting systems, which allows the addition or relocation of luminaires without altering the wiring of the system; or

2-B. Low voltage track heads mounted on line-voltage track or busway; or

C. Low voltage monopoint luminaires.¹²

5. The wattage of luminaires with light emitting diodes (LED) shall be the maximum rated input wattage of the luminaire, including power used by fans, transformers and power supply devices. Luminaire wattage shall be based on an independent testing lab report of the rated luminaire when tested in accordance with Reference Joint Appendix 6 (JA6). The maximum rated input wattage shall be listed on a permanent, pre-printed, factory-installed label as specified by Underwriters Laboratories (UL).¹³

- ~~56.~~ The wattage of all other miscellaneous lighting equipment shall be the maximum rated wattage of the lighting equipment, or operating input wattage of the system, listed on a permanent, pre-printed, factory-installed label, or published in manufacturer's catalogs, based on independent testing lab reports as specified by UL 1574 or UL 1598.¹⁴

(e) **GU-24 Lamps, Luminaires, and Adaptors.** GU-24 Lamps, Luminaires, and Adaptors sold, offered for sale, or installed in California shall meet the following requirements:¹⁵

1. Lamps with GU-24 bases shall have a minimum efficacy no lower than specified in Table 150-C.
2. Luminaires with GU-24 lampholders shall not be rated for any lamp or lighting system that has an efficacy lower than specified in Table 150-C, as listed on a permanent, pre-printed, factory-installed label on the luminaire housing.

3. Luminaires with GU-24 lampholders shall not have modular components allowing conversion to any lamp or lighting system that has an efficacy lower than specified in Table 150-C.
4. There shall be no adaptors that convert a GU-24 socket or GU-24 lamp holder to any other line voltage socket or lamp holder, or to any lighting system that has an efficacy lower than specified in Table 150-C.

SECTION 131 – INDOOR LIGHTING CONTROLS THAT SHALL BE INSTALLED

(a) Area Controls.

1. Each area enclosed by ceiling-height partitions shall have an independent switching or control device. This switching or control device shall be:
 - A. Readily accessible; and
 - B. Located so that a person using the device can see the lights or area controlled by that switch, or so that the area being lit is annunciated; and
 - C. Manually operated, or automatically controlled by an occupant-sensor that meets the requirements of Section 119 (d).
2. Other devices may be installed in conjunction with the switching or control device provided that they:
 - A. Permit the switching or control device to manually turn the lights off~~override the action of all other devices~~¹⁶ in each area enclosed by ceiling-height partitions; and
 - B. Reset the mode of any automatic system to normal operation without further action.

EXCEPTIONS to Section 131 (a):

1. Up to ~~one-half~~0.3 watts per square foot of lighting in any area within a building that must be continuously illuminated for reasons of building security or emergency egress, if:¹⁷
 - A. The area is designated a security or emergency egress area on the plans and specifications submitted to the enforcement agency under Section 10-103 (a) (2) of Title 24, Part 1; and
 - B. The ~~area security or egress lighting~~ is controlled by switches accessible only to authorized personnel.¹⁸
 2. Public areas with switches that are accessible only to authorized personnel.
- (b) **Multi-Level Lighting Controls.** The general lighting of any enclosed space ~~that has more than one luminaire, is 100 square feet or larger, and has a in which the~~ connected lighting load ~~that~~ exceeds 0.8 watts per square foot, ~~and that has more than one light source (luminaire), shall have multi-level lighting controls. A multi-level lighting control is a lighting control that reduces lighting power by either continuous dimming, stepped dimming, or stepped switching while maintaining a reasonably uniform level of illuminance throughout the area controlled.~~ Multi-level controls shall have at least one control step that is between ~~50~~30% and 70% of design lighting power and allow the power of all lights to be manually turned off, and at least one step of minimum light output operating at less than 35% of full rated lighting system power (this control step could be completely off, creating a bi-level control). A reasonably uniform level of illuminance ~~in an area~~ shall be achieved by any of the following:¹⁹
1. Continuous or stepped d~~Dimming~~ all lamps or luminaires; or
 2. Switching alternate lamps in luminaires, alternate luminaires, and alternate rows of luminaires.

EXCEPTION to Section 131 (b): Lights in corridors.

- (c) **Daylit Areas.** Luminaires providing general lighting that are in or are partially in the skylit daylight area and/or the primary sidelit daylight ~~daylit~~ area shall be controlled as specified in according to the applicable requirements of Sections 131(c)1 and 131(c)2, in items 1 and 2 below.²⁰ ~~The daylit area under skylights shall be the rough opening of the skylight plus, in each of the lateral and longitudinal dimensions of the skylight, the lesser of 70% of the floor to ceiling height, the distance to the nearest 60-inch or higher permanent partition, or one-half the horizontal distance to the edge of the closest skylight or vertical glazing. The daylit area illuminated by vertical glazing shall be the daylit depth multiplied by the daylit width, where the daylit depth is 15 feet, or the distance on the floor, perpendicular to the glazing, to the nearest 60-inch or higher permanent partition, whichever is less; and the daylit width is the width of the window plus, on each side,~~

~~either 2 feet, the distance to a permanent partition, or one half the distance to the closest skylight or vertical glazing, whichever is least.~~

1. ~~Luminaires providing general lighting that are at least 50 percent in the skylit or the primary sidelit daylight areas shall be controlled in accordance with the applicable requirements of items A, B, and C below Sections 131(c)1A to 131(c)1C.~~²¹

A. ~~Primary sidelit and skylit daylight areas, as specified by Sections 146(a)1Ei and 146(a)Eiii, respectively, with that have a combined area totaling more greater than 250 square feet ft² within any enclosed space shall be shown illustrated on the building plans and shall have at least one lighting control that:~~

~~i. Controls at least 50% of the power in the daylight skylit and primary sidelit and skylit daylight areas separately from other lighting in the enclosed space; and~~

~~ii. Controls luminaires in vertically daylight primary sidelit areas separately from horizontally skylit daylight areas.~~

~~iii. Maintains a reasonably uniform level of illuminance in the daylight area using one of the methods specified in Section 131-(b)-items 1 or 131(b)2.~~

- ~~B. 2. When Where the daylight total skylit area in any enclosed space is under skylights and has a total area greater than 2,500 square feet, the general lighting in the daylight area under skylights skylit area shall be controlled separately independently by either an automatic multi-level daylighting control that meets the requirements of Section 119 (i) or a multi-level astronomical time switch that meets the requirements of section 119 (h) and has override switches that meet the requirements of section 131 (d) 2, an automatic daylighting control device that meets the requirements of Section 119(f).~~

~~**EXCEPTION to Section 131(c)1B:** When the skylight effective aperture is greater than 4.0 percent, a multi-level astronomical time switch that meets the requirements of Section 119(h) and that has an override switch that meets the requirements of Section 131(d)2 may be used to comply with the daylighting control device requirements of Section 131(c)3B.~~

- ~~C. Where the total primary sidelit daylight area in any enclosed space has an area greater than 2,500 square feet, the general lighting in the primary sidelit areas shall be controlled independently by an automatic daylighting control device that meets the requirements of Section 119(e)~~

~~**EXCEPTION to Section 131(c)1C:** Primary sidelit daylight areas where the lighting power density of the general lighting is less than 0.3 watts per square foot.~~

EXCEPTIONS to Section 131-(c)

1. ~~Primary sidelit daylight areas where the effective aperture is less than 0.1 for vertical glazing and and skylit daylight areas where the effective aperture is less than 0.006 for skylights. The effective aperture for vertical glazing is the visible light transmittance (VLT) times the window wall ratio. The effective aperture for skylights skylit and primary sidelit daylight areas and sidelights is specified in Section 146-(a) 4-E.~~
 2. ~~Primary sidelit daylight areas where existing adjacent structures or natural objects obstruct daylight to the extent that effective use of daylighting is not feasible are twice as tall as their distance away from the windows.~~
 3. ~~Skylit daylight areas where existing adjacent structures obstruct direct beam sunlight for at least six hours per day during the equinox as calculated using computer or graphical methods.~~
 4. ~~Parking garages.~~
- ~~2. Automatic Daylighting Control Devices. Automatic daylighting control devices shall have photosensors that are either ceiling mounted or located so that they are accessible only to authorized personnel, and that are located so that they maintain adequate illumination in the area in accordance with the designer's or manufacturer's instructions.~~

(d) Shut-off Controls.

1. ~~In addition to the manual controls installed to comply with Section 131(a) and (b), Ffor every floor, a all indoor lighting systems shall be equipped with a separate automatic controls, to shut off the lighting. These is automatic~~

controls shall meet the requirements of Section 119 and may be an occupant sensor, automatic time switch, or other device capable of automatically shutting off the lighting.²²

EXCEPTIONS to Section 131 (d) 1:

1. Where the lighting system is serving an area that must be continuously lit, 24 hour per day/365 days per year.²³
2. Lighting in corridors, guestrooms, and lodging quarters of high-rise residential buildings and hotel/motels, and parking garages.²⁴
3. Up to one-half 0.3 watts per square foot of lighting in any area within a building that must be continuously illuminated for reasons of building security or emergency egress: provided that:
 - A. The area is designated a security or emergency egress area on the plans and specifications submitted to the enforcement agency under Section 10-103 (a) (2) of Title 24, Part 1; and²⁵
 - B. The security or egress lighting is controlled by switches accessible only to authorized personnel.
2. If an automatic control device is installed to comply with Section 131 (d) 1, it shall incorporate an override switching device that:²⁶
 - A. Is readily accessible; and
 - B. Is located so that a person using the device can see the lights or the area controlled by that switch, or so that the area being lit is annunciated; and
 - C. Is manually operated; and
 - D. Allows the lighting to remain on for no more than two hours when an override is initiated; and

EXCEPTION to Section 131 (d) 2 D: In malls, auditoriums, single tenant retail spaces, industrial facilities, and arenas, where captive-key override is utilized, override time may exceed two hours.

- E. Controls an area enclosed by ceiling height partitions not exceeding 5,000 square feet.

EXCEPTION to Section 131 (d) 2 E: In malls, auditoriums, single tenant retail spaces, industrial facilities, convention centers and arenas, the area controlled may not exceed 20,000 square feet.

3. If an automatic time switch control device is installed to comply with Section 131 (d) 1, it shall incorporate an automatic holiday "shut-off" feature that turns off all loads for at least 24 hours, and then resumes the normally scheduled operation.

EXCEPTION to Section 131 (d) 3: Retail stores and associated malls, restaurants, grocery stores, churches, and theaters.

4. Offices 250 square feet or smaller, classrooms of any size; lecture, training, or vocational rooms of less than 1000 square feet; multipurpose rooms of less than 1000 square feet; and conference rooms and meeting rooms less than 1000 square feet in hotels, convention, conference, multipurpose and meeting centers; shall be equipped with occupant sensor(s) to shut off the lighting. In addition, controls shall be provided that allow the lights to be manually shut off in accordance with Section 131(a) regardless of the sensor status.²⁷

- (e) **Display Lighting.** ~~Display lighting shall be separately switched~~ Floor and wall display, window display, and case display lighting shall each be separately switched on circuits that are 20 amps or less.²⁸

- ~~(f) **Lighting Control Acceptance.** Before an occupancy permit is granted for a new building or space, or a new lighting system serving a building or space is operated for normal use, all lighting controls serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. A Certificate of Acceptance shall be submitted to the building department that:~~²⁹

1. ~~Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.~~
2. ~~Certifies that automatic daylighting controls meet the requirements of Section 119 (e) through Section 119 (g).~~

- ~~3.—Certifies that lighting controls meet the requirements of Section 131 (a) through Section 131 (c), Sections 131 (e) and (f), and Section 146(a) 4 D.~~
- ~~4.—Certifies that automatic lighting controls meet the requirements of Section 119 (e) and 131 (d).~~
- ~~5.—Certifies that occupant sensors meet the requirements of Section 119 (d) and 131 (d).~~

~~(f) **Automatic Controls Required for Tailored Method.** When the Tailored Method in Section 146 is used for calculating allowed indoor lighting power density, general lighting shall be automatically controlled so that lighting power no greater than allowed in Table 146-G, column 2the general lighting system shall be controlled separately from the display, ornamental, and display case lighting systems so that only the general lighting may be left on for housekeeping.~~

~~(g) **Demand Responsive Lighting Controls.** In a retail building with a sales floor area greater than 50,000 square feet, demand responsive lighting controls shall be installed that uniformly reduces lighting power consumption by a minimum of 15 percent.~~

~~**EXCEPTION to Section 131(g).** Buildings where more than 50 percent of the lighting power is controlled by daylighting controls.~~

SECTION 132 – OUTDOOR LIGHTING CONTROLS AND EQUIPMENT

(a) **Outdoor Lighting.** All permanently installed outdoor luminaires employing lamps rated over 100 watts shall either: have a lamp efficacy of at least 60 lumens per watt; or be controlled by a motion sensor.

EXCEPTIONS to Section 132 (a):

1. Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting.
2. Lighting used in or around swimming pools, water features, or other locations subject to Article 680 of the California Electrical Code.
3. Searchlights.
4. Theme lighting for use in theme parks.
5. Lighting for film or live performances.
6. Temporary outdoor lighting.
7. Light emitting diode, neon and cold cathode lighting.

~~8. Sign lighting³⁰~~

(b) **Luminaire Cutoff Requirements.** All outdoor luminaires that use lamps rated greater than ~~475-150~~³¹ watts in hardscape areas including parking lots, building entrances, sales and non-sales canopies, and all outdoor sales areas shall be designated Cutoff for light distribution. To comply with this requirement the luminaire shall be rated Cutoff in a photometric test report that includes any tilt or other non-level mounting condition of the installed luminaire. Cutoff is a luminaire light distribution classification where the candela per 1000 lamp lumens does not numerically exceed 25 at or above a vertical angle of ninety degrees above nadir, and 100 at or above a vertical angle of eighty degrees above nadir. Nadir is in the direction of straight down, as would be indicated by a plumb line. Ninety degrees above nadir is horizontal. Eighty degrees above nadir is 10 degrees below horizontal.

EXCEPTIONS to Section 132 (b):

~~1. Internally illuminated, externally illuminated, and unfiltered signs.~~³²

2. Lighting for building facades, public monuments, statues, and vertical surfaces of bridges.
3. Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting.
4. Temporary outdoor lighting.
5. Lighting used in or around swimming pools, water features, or other locations subject to Article 680 of the California Electrical Code.

6. Replacement of existing pole mounted luminaires in hardscape areas meeting all of the following conditions:
 - A. Where the existing luminaire does not meet the luminaire cutoff requirements in Section 132(b); and
 - B. Spacing between existing poles is greater than six times the mounting height of the existing luminaires; and
 - C. Where no additional poles are being added to the site; and
 - D. Where new wiring to the luminaires is not being installed; and
 - E. Provided that the connected lighting load is not increased.³³

(c) **Controls for Outdoor Lighting**

1. All permanently installed outdoor lighting shall be controlled by a photocontrol or astronomical time switch that automatically turns off the outdoor lighting when daylight is available.

EXCEPTION to Section 132 (c) 1: Lighting in ~~parking garages,~~ tunnels, and large covered areas that require illumination during daylight hours.³⁴

2. For lighting of building facades, parking lots, ~~garages,~~ sales and non-sales canopies, and all outdoor sales areas, where two or more luminaires are used, an automatic time switch shall be installed that is capable of (1) turnings off the lighting when not needed and (2) reducinges the lighting power (in watts) by at least 50% but not exceeding 80% or providinges continuous dimming through a range that includes 50% through 80% reduction. This control shall meet the requirements of Section 119 (c).³⁵

EXCEPTIONS to Section 132 (c) 2:

1. Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting.
2. Lighting for steps or stairs that require illumination during daylight hours.
3. Lighting that is controlled by a motion sensor and photocontrol.
4. Lighting for facilities that have equal lighting requirements at all hours and are designed to operate continuously.
5. Temporary outdoor lighting.
6. ~~Internally illuminated, externally illuminated, and unfiltered s~~Signs.³⁶

SECTION 133 – ~~RESERVED.~~ SIGN LIGHTING CONTROLS³⁷

(a) Controls for All Signs. All signs shall meet the requirement of Section 133(a)1 and 133(a)2 below:

1. Automatic Time Switch Control. All signs with permanently connected lighting shall be controlled with an automatic time switch control that complies with Section 119(c).
2. Demand Responsive Sign Control. A Sign that is illuminated during the day that is a message-board having a new connected lighting power load greater than 20 kW, and internally illuminated signs having a new connected lighting power load greater than 8 kW, shall have controls installed that are capable of receiving a demand response signal to reduce the sign load by a minimum of 30%.

EXCEPTION to Section 133 (c). Signs illuminated by gas discharge lamps not containing mercury gas are not required to have demand response controls

(b) Controls for Outdoor Signs Normally Off during Daytime. All permanently installed outdoor signs that are normally off during daytime shall be controlled by a photocontrol, and an automatic-time switch complying with Section 119(c) or an outdoor astronomical time switch complying with Section 119(j), that automatically turns off the outdoor signs when daylight is available.

(c) Controls for Outdoor Signs Normally On during Daytime. All permanently installed outdoor signs that are normally on during daytime shall be controlled by an automatic- time switch complying with Section 119(c) or an outdoor astronomical time switch complying with Section 119(j) that provides the ability to automatically reduce sign power by a minimum of 65%.

EXCEPTION 1 to Section 133 (b): Outdoor signs in parking garages, tunnels, and large covered areas that require illumination during daylight hours.

EXCEPTION 2 to Section 133 (b): Signs illuminated by gas discharge lamps not containing mercury gas.

SECTION 134 – ~~RESERVED~~ REQUIRED NONRESIDENTIAL LIGHTING CONTROL ACCEPTANCE.³⁸

(a) **Lighting Control Acceptance.** Before an occupancy permit is granted for a new building or space, or a new lighting system serving a building, space, or site is operated for normal use, all indoor and outdoor lighting controls serving the building, space, or site shall be certified as meeting the Acceptance Requirements for Code Compliance. A Certificate of Acceptance shall be submitted to the building department that:

1. Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6.
2. Certifies that automatic daylighting controls meet the requirements of Section 119 (e) through Section 119 (g) and Section 132(c)2.
3. Certifies that lighting controls meet the requirements of Section 131 (a) through Section 131 (c), Sections 131 (e) and (f), and Section 146(a) 4 D.
4. Certifies that automatic lighting controls meet the requirements of Section 119 (c) and 131 (d).
5. Certifies that occupant-sensors meet the requirements of Section 119 (d) and 131 (d).
6. Certified that outdoor lighting controls meet the requirements of Section 119 and 132.

SECTION 135 – RESERVED.

SECTION 136 – RESERVED.

SECTION 137 – RESERVED.

SECTION 138 – RESERVED.

SECTION 139 – RESERVED.

End Notes

The following notes are an explanation of the changes that have been made. These notes are not part of the Standard.

¹ Language moved from Section 119(g)(1) and moved both here and to Section 130(b) for clarity.

² This exception is no longer needed and was proposed to be removed at a staff workshop. Much of the lighting in guest rooms will comply with Standards simply by installing either occupancy sensors or dimmers. Staff discussed this with the hotel industry representative, Jim Abrams, who offered to get back to staff on their opinion about this proposal.

³ Added for clarity in response to inquiries.

⁴ Language copied from the 2005 Nonresidential Compliance Manual and added in response to discussions with UL staff.

⁵ The Energy Commission has been using the permanent factory installed label as one method to determine luminaire wattage because there has always been practical constraints built into its use for energy purposes. The CEC used these practical constraints as a method to insure that no more wattage, than allowed by Title 24, will be installed. Up to this time, it has been practical for manufacturers to have only a few SKUs per each UL-1598 tested unit. Each luminaire model has been available in only one to maybe three wattages. Those natural constraints kept this method of determining connected load for the purpose of energy compliance from being abused. However, if manufacturers start providing peel-down labels, this opens up a huge loophole whereby an unlimited number of luminaires can be installed, then the allowed power budget can simply be reverse engineered to see how low the wattage of each must be claimed in order to comply with Standards, and then simply peel down to that number. If that happens, it will soon be learned that the maximum relamping rated wattage is a meaningless number. Not only will that open up loopholes in energy compliance, but it may create fire hazards by some who come to believe that it is OK to exceed the rated heat tolerance. This added language will maintain existing labeling conventions.

⁶ Added for clarity in response to technology advances in ballasts, in which some ballasts now available are designed to accommodate a range of lamp wattages.

⁷ The language “or by a method approved by the Commission” as it relates to track lighting, is existing in Section 146(a)(6) in the 2005 and earlier versions of Title 24, Part 6.

⁸ Edited for clarity

⁹ Edited to be consistent with proposed language added to Section 119 based upon similar language in the 2005 Nonresidential Compliance Manual regarding requirements for certifying track lighting integral current limiter.

¹⁰ The option for 45 watts per linear foot was based on a historical consensus which has never been validated through independent scientific studies. This unsubstantiated option is no longer needed because track lighting technology has evolved to offer more reliable energy efficiency controls. Two new preferable options are now readily available: An integral current limiter and a dedicated track lighting sub-panel.

¹¹ This new technology was informally approved by an Energy Commission interpretation under the 2005 Standards as another option for the VA rating of a branch circuit feeding the track. This panel cannot be considered an integral current limiter because it is not an integral part of the “fixture.”

¹² Edited for clarity and because existing language does not adequately address all low-voltage lighting systems.

¹³ Joint Appendix 6 will have the following language: UL 1598 testing apparatus in a National Voluntary Laboratory Accreditation Program (NVLAP) or International Standards Organization (ISO) 17025 accredited lab. The ambient temperature in which measurements are being taken shall be maintained at 25°C ± 1°C. The AC power supply shall have a frequency of 60 Hz, and a sinusoidal voltage wave shape. The voltage of an AC or DC power supply shall be regulated to within ±0.2 percent. The SSL product under test shall be burned-in for 100 hours before testing. The SSL product under test shall be operated and stabilized before testing at ambient temperature and burning position as specified until the SSL product reaches thermal equilibrium. Stability is reached when the variation of light output remains within 1% for a period of 10 minutes at constant ambient temperature and constant electrical input. The SSL product under test shall be measured at the burning position in which it will be installed in the luminaire. The SSL product under test shall be

operated at the rated voltage (AC or DC) according to the specification of the SSL product for its normal use. Pulsed operation of the device shall not be acceptable.

¹⁴ “pre-printed” added to clarify the intent of the Standards.

¹⁵ This language is consistent with new proposed Section 150(k)(3). The EPA had conducted an effort to develop a new socket that would only be used for high efficacy lighting sources. However, there are currently no state or federal standards limiting the use of the new GU-24 sockets to only high efficacy sources or luminaires. Energy Commission staff has worked with EPA, NEMA, and other stakeholders to help insure that this new socket type continues to be used only for high efficacy lighting sources. There are also requirements written into Section 150(k) to address potentially heat failures, for which NEMA supports not allowing CFL ballasts to use GU-24 bases when used inside recessed downlights.

¹⁶ Edited for clarity

¹⁷ Updated to reflect current lighting technology. The number 0.5 watts per square feet was developed long ago using T-12 lamps and magnetic ballasts. This lower number reflects today’s commonly used T-8 lamps and electronic ballasts.

¹⁸ Edited for clarity.

¹⁹ Edited for clarity.

²⁰ Language moved to Section 131(c)3 for clarity and section continuity.

²¹ Following language proposed in PG&E skylight and sidelight templates.

²² Edited for clarity.

²³ The word “lighting” added for clarity.

²⁴ “Garages” have been added to this exception because garages have switching and time of use requirements similar to lighting in corridors, guestrooms, and lodging quarters of high-rise residential buildings and hotel/motels for which this exception has applied. The addition has been supported by stakeholders.

²⁵ Edited to clarify intent. This language has been copied from existing language in Exceptions to Section 131(a) in the 2005 Standards.

²⁶ Edited for clarity

²⁷ Template submitted by Jim Benya. Also recommended by stakeholders at a staff workshop.

²⁸ Edited for clarity in response to comments received at a staff workshop.

²⁹ Edited for clarity. Lighting acceptance requirements have been moved to the new Section 134.

³⁰ Edited for clarity. Sign lighting controls moved to new Section 133.

³¹ Proposed in PG&E Outdoor Lighting template.

³² Edited for clarity..

³³ Edited for clarity in response to inquiries.

³⁴ Edited for clarity. Garages are indoor lighting applications according to the Standards. Therefore, should be regulated in Section 131 rather than Section 132.

³⁵ Edited for clarity

³⁶ Edited for clarity

³⁷ Added according to PG&E sign lighting template.

³⁸ Moved from Section 131(f) and into new Section 134 for clarity and to be consistent with the format used for HVAC acceptance requirements.