



California Energy Efficiency Codes for Lighting Manufacturers

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Certification Requirements

Manufacturer is responsible for certification of regulated devices, as applicable, according to:

- Title 20 Appliance Efficiency Regulations
- Title 24 Building Energy Efficiency Standards



T20 Certification Requirements

California Appliance Efficiency Regulations (Title 20)

- Apply to appliances sold or offered for sale in California
 - Except those sold wholesale in California for final retail sale outside the state
 - Except those designed and sold exclusively for use in recreational vehicles or other mobile equipment



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Home » appliances

Appliance Efficiency Program

The Energy Commission's energy efficiency standards have saved Californians more than \$74 billion in reduced electricity bills since 1975. [Read more...](#)

Manufacturers must certify appliance efficiency data to the Energy Commission in order to comply with state law.



[Compliance](#) - Go here for information on our compliance program, to certify appliance data, or apply for approval of a test laboratory or third party certifier.



[Enforcement](#) - Go here for information on our enforcement program, to report a violation, or to respond to an enforcement letter.



[Outreach](#) - Go here for outreach and education materials such as flyers, brochures, reports, and FAQs.

Appliance Efficiency Database

Proceedings & Rulemakings

- » 2013 Appliance Efficiency Pre-Rulemaking



[2012 Appliance Efficiency Regulations](#)

These regulations were adopted by the Energy Commission on January 12, 2012.

Effective February 1, 2013

Go To

- » Report Non-compliance
- » Historical Appliance Listings
- » Subscribe to Listserv
- » Get Additional Help

External links

- » ENERGY STAR
- » Multi-State Appliance Collaborative
- » Engage 360 Rebates & Incentives
- » Consortium of Energy Efficiency
- » Consumer Energy Center



Appliance Efficiency Compliance

The Appliance Efficiency Program requires that the manufacturers of certain appliances meet state and federal standards for energy and water efficiency. Manufacturers must also certify the performance of their appliances to the Energy Commission to demonstrate compliance with the standards and make this information available to the public.

Instructions and Forms

Manufacturers

- [General Instructions for Submitting Appliance Certification Data \(Spanish, Korean, Chinese\)](#)
- [Certification Packets for Appliances](#)

Third Party Certifiers

- [Additional Instructions for Third Party Certification \(Spanish, Korean, Chinese\)](#)
- [2013 Application for Approval as a Third-party Certifier](#)
- [Manufacturer Delegation of Authority](#)

Test Laboratories

- [How to Apply for Test Laboratory Approval \(Spanish, Korean, Chinese\)](#)
- 2013 Test Laboratory Application Forms
 - [2013 Renewal Application](#)
 - [2013 Generic Test Laboratory Application](#)



T20 Regulated Lighting Devices

- Fluorescent Lamp Ballasts
- Lamps: General Service Fluorescent; Incandescent Reflector; Medium Base Compact Fluorescent; Candelabra Base Incandescent; Intermediate Base Incandescent; General Service
- Traffic Signals for Vehicle and Pedestrian Control
- Luminaires: Metal Halide; Under-Cabinet; Portable
- Lighting Control Devices
- External Power Supplies



T24 Certification Requirements

- For items regulated by Title 20, installation limited
 - Items certified to the Energy Commission by their manufacturer
 - Pursuant to Title 20 Cal. Code of Regulations
 - To meet or exceed minimum specifications



T24 Certification Requirements

- Items not regulated by Title 20, limited to those:
 - Certified by manufacturer
 - In a declaration
 - Under penalty of perjury
 - All information provided is true, complete, accurate and in compliance with all applicable provisions of Part 6



T24 Certification Requirements

- For items required to be listed in directories or certified by someone other than the Energy Commission, manufactured device shall be confirmed only by reference to:
 - A directory published or approved by the Commission; or
 - Copy of application for certification from manufacturer and letter of acceptance from the Commission staff; or
 - Written confirmation from publisher of a Commission-approved directory; or
 - Commission-approved label on the device



T24 Certification Requirements

- Builder, designer, owner, operator, or enforcing agency
 - NOT REQUIRED to test any certified device to determine its compliance



2013 T24, Part 6 Effective Date

- For projects for which a permit application is submitted on or after January 1st, 2014.



§110.9 Lighting Control Devices and Systems

- §110.9 lighting control requirements have been split:
 - Title 20 for lighting control “devices”
 - Consisting of a single component
 - Must be certified to the Energy Commission, by the manufacturer, according to Title 20



§110.9 Lighting Control Devices and Systems

- §110.9 lighting control requirements have been split:
 - “Systems”
 - Consist of more than one component
 - Not required to be certified to the Energy Commission
 - Except for regulated components (i.e. photo control)
 - Comply with all functional requirements in Title 20 standards
 - Installation certificate signed by licensee of record



§110.9 Ballasts for Residential Recessed CFL Luminaires

- To qualify as residential high efficacy luminaires:
 - Requirements for ballasts in residential recessed compact fluorescent luminaires
 - Includes low rise residential buildings; and, inside dwelling units of high-rise residential, hotel/motel, fire stations, and dormitory/senior housing



§110.9 Residential Recessed CFL Luminaires – Ballast Requirements

- To qualify as residential high efficacy CFL luminaire, shall:
 - Rated life $\geq 30,000$ hours when operated at or below a specified maximum case temperature
 - BF ≥ 0.90 for non-dimming ballasts; ≥ 0.85 for dimming ballasts
- This requirement same as previously Standards
- Adopted to address premature heat failure
 - Residential Standards also require IC/AT
- Not required to be certified to Energy Commission



§110.9 Residential High Efficacy LED

- To qualify as residential high efficacy luminaires:
 - Requirements for residential LED luminaires
 - Includes low rise residential buildings; and, inside dwelling units of high-rise residential, hotel/motel, fire stations, and dormitory/senior housing



§110.9 Residential High Efficacy LED

- To qualify as residential high efficacy LED luminaire, shall:
 - Be certified to Energy Commission by manufacturer
 - Luminaires not certified classified as low efficacy regardless of actual efficacy
 - Meet requirements in Reference Joint Appendix JA-8



JA-8 Residential High Efficacy LED

- Shall be manufactured for use in residential applications
 - Do not certify nonresidential luminaires, LED landscape luminaires, partially compliant luminaires, components, track lighting, luminaire housings...
 - The purpose ONLY to qualify residential LED luminaires
- See handout copy of JA-8 for details



JA-8 Residential High Efficacy LED

- 2008 list shall be retired
 - Estimated ½ products on list do not belong there:
 - » Nonresidential luminaires
 - » Components not fully complying with all of JA-8
 - » Housings, etc...
- Only residential high efficacy LED luminaires certified anew, declared by manufacturer to be fully compliant with 2013 JA-8, shall be on the new list



§110.9 Track Lighting Integral Current Limiter

- Shall be certified to the Energy Commission by manufacturer
- Staff inspection of the devices no longer required
- Recognized only for use with line-voltage track lighting
- Certificate of Installation must also be signed by licensee of record



§110.9 Track Lighting Integral Current Limiter

- Used exclusively on same manufacturer's track
- Housing permanently attached so system irreparably damaged if removed. Might be:
 - One-way barbs
 - Rivets
 - One-way screws
- Tamper resistant fasteners for cover to wiring compartment



§110.9 Track Lighting Integral Current Limiter

- Identical volt-ampere (VA) rating of the current limiter:
 - Visible for field inspection without opening coverplates, fixtures, or panels; and
 - Permanently marked on the circuit breaker; and
 - On factory-printed label permanently affixed to non-removable base-plate inside wiring compartment.
- Shall have conspicuous factory installed label permanently affixed to the inside of the wiring compartment warning against removing, tampering with, rewiring, or bypassing the device



§110.9 Track Lighting Integral Current Limiter

- Manufacturer must provide label(s) for installer to use:
 - Each electrical panel from which track lighting integral current limiters are energized shall have:
 - Factory printed label permanently affixed and prominently located, which includes specific statement, which includes:
 - Replaced with same or lower amperage
 - Adding track or higher continuous ampere rating will void track lighting integral current limiter



§110.9 Track Lighting Supplementary Overcurrent Protection Panel

- NOT required to be certified to the Energy Commission
- Shall be recognized only for use with line-voltage track lighting systems
- Certificate of Installation must be signed



§110.9 Track Lighting Supplementary Overcurrent Protection Panel

- Each Supplementary Overcurrent Protection Panel shall have:
 - Factory printed label permanently affixed and prominently located on the panel, which includes a specific statement:
 - Current limiters shall only be replaced with the same or lower amperage
 - Adding track or replacement of existing current limiters with higher continuous ampere rating will void the track lighting integral current limiter certification



Luminaire Classification and Power

Types of luminaire classifications in Standards:

	Nonresidential	Residential
Classify by type of technology	Yes	Yes
Determine installed power	Yes	Only in Kitchens
Classify as high vs. low efficacy	No	Yes



Luminaire Classification and Power

§130.0(c) - Peel-down labels showing relamping wattage generally NOT allowed, except for the following limited applications:

- Luminaires that accept different wattage lamps without changing the ballast/transformer or rewiring, limited to:
 - HID luminaires $\leq 150W$
 - CFL luminaires $\leq 42W$
 - Low voltage ($\leq 24V$) luminaires which are $\leq 50W$
- Transformer/ballast must be integral to luminaire
- Only single lamp per luminaire
- Labeled such that rated wattage reduces as successive layers are removed



Luminaire Classification and Power

Line-voltage Incandescent of any socket/lamp holder type:

- Maximum relamping rated wattage of the luminaire
- Always classified as incandescent regardless of lamp type installed
- Recessed luminaires never recognized < 50 W per socket



Luminaire Classification and Power

Line-voltage Incandescent of any socket/lamp holder type:

- If manufacturer has incandescent module available,
 - Then installation classified as incandescent
- Screw-based adaptors never recognized,
 - NOT even if manufacturer classifies as “permanent”
- Field modifications never recognized for newly installed luminaires,
 - NOT even if hard wired



Luminaire Classification and Power

Luminaire with only GU-24 Socket:

- Not classified as incandescent
 - Title 20 prohibits sale in California of any incandescent GU-24 products
 - » NO incandescent lamps
 - » No incandescent luminaires
 - » No GU-24 to incandescent adaptors
- Use maximum relamping rated wattage of the luminaire
- Label shall identify luminaire or housing as LED, HID, CFL



Luminaire Classification and Power

Luminaires with ballasts:

- Operating input wattage of the rated lamp/ballast combination
 - published in ballast manufacturer's catalogs
 - based on independent testing lab reports
 - as specified by UL 1598
- Linear LED lamps not recognized as converting a fluorescent luminaire to LED



Luminaire Classification and Power

Line-voltage lighting track and plug-in busway

- Allows addition or relocation of luminaires without altering the wiring of the system
 - One option - rated $> 20A$
 - Four options - rated $\leq 20A$



Luminaire Classification and Power

Line-voltage lighting track and plug-in busway rated $> 20A$

- VA rating of branch circuit feeding the busway and track



Luminaire Classification and Power

Line-voltage lighting track and plug-in busway rated $\leq 20A$, one of the following four options

1. VA rating of the branch circuit feeding the track or busway
2. Higher of rated wattage of all luminaires or 45W/lin ft
3. When using certified track lighting integral current limiter, higher of VA rating or 12.5 watts per linear foot
4. When using dedicated track lighting supplementary overcurrent protection panel
 - Sum A rating all overcurrent protection devices times branch circuit V



Luminaire Classification and Power

Low Voltage Lighting (< 90V)

- Has integrated or remotely installed transformer
- For luminaires that do not allow addition of lamps, lamp holders, or luminaires without rewiring
 - Rated wattage of the lamp/transformer combination.
- For tracks & other systems which allow addition of lamps, lamp holders, or luminaires without rewiring
 - Maximum rated input wattage of the transformer
 - Labeled in accordance with §130.0(c)1
 - Or published in transformer manufacturer's catalogs



Luminaire Classification and Power

LED Luminaires & Light Engine

- For static system, max rated input wattage tested in accordance with IES LM-79-08
- For variable load LED systems
 - Which allow addition of luminaires or light engines without rewiring
 - Max rated input wattage of the power supply
 - Labeled in accordance with Section 130.0(c)1 or
 - Published in the power supply manufacturer's catalog.



Luminaire Classification and Power

LED Luminaires & Light Engine

- Not integrated or non-integrated lamp in accordance with ANSI/IES RP-16-2010
- Not LED module having screw-base
 - No screw based pig-tail
 - No screw-based socket
 - No screw-based adaptor
- Not a luminaire manufactured or rated for use with low-voltage incandescent lamps



Luminaire Classification and Power

Other miscellaneous lighting equipment

- Only applies to lighting equipment not addressed in other subsections.
 - Maximum rated wattage of the lighting equipment
 - Or operating input wattage of the system
 - Labeled in accordance with Section 130.0(c)1
 - Or published in manufacturer's catalogs
 - Based on independent testing lab reports
 - As specified by UL 1574 or UL 1598



Residential High & Low Efficacy

Table 150.0-A

High Efficacy Light Sources

Luminaires manufactured, designed and rated for use with only:

1. Pin-based linear or CFL with electronic ballasts
 - ≥ 13 W CFL shall have 4 pins for compliance with electronic ballast requirements
2. PSMH
3. HPS



Residential High & Low Efficacy

Table 150.0-A

High Efficacy Light Sources

4. GU-24 sockets rated for LED
5. GU-24 sockets rated for CFL
6. LED certified to Commission in accordance with JA8.
7. Housings rated by manufacturer for only LED light engines.
8. Induction lamps

Note: Adaptors not recognized to classify as high efficacy.



Residential High & Low Efficacy

Table 150.0-A

Low Efficacy Light Sources

1. Line-voltage lamp holders (sockets) capable of operating incandescent lamps of any type.
2. Low-voltage lamp holders capable of operating incandescent lamps of any type.
3. High efficacy lamps installed in low-efficacy luminaires



Residential High & Low Efficacy

Table 150.0-A

Low Efficacy Light Sources

4. Mercury vapor
5. Track lighting or other flexible lighting system
6. LED not certified to the Commission as high efficacy.
7. Modular components that allow conversion to low-efficacy without wiring.
8. Blank electrical boxes



Residential High & Low Efficacy

Table 150.0-B

Used only in rare event there is new lighting technology not addressed in Table 150.0-A

Minimum Luminaire Efficacy to Qualify as High Efficacy:

≤ 5 W	/ 30 lumens per watt
> 5 W to 15 W	/ 45 lumens per watt
> 15 W to 40 W	/ 60 lumens per watt
> 40 W	/ 90 lumens per watt



Lighting Alterations

- Three types of alterations:
 - Lighting system alterations (§141.0(b)2ii)
 - Luminaire modifications in place (§141.0(b)2iii)
 - Wiring alterations (§141.0(b)2iv)

Routine maintenance is not an alteration (§141.0(b)2vii)

- Replacement in kind of parts of an existing luminaire that include only new lamps, lamp holders, or lenses
- Ballast + Lamps regulated at certain thresholds



Lighting Alterations

Lighting Alteration Exceptions:

- Replacement in kind of parts of an existing luminaire that include only new lamps, lamp holders, or lenses, when replacement of those parts is not a Luminaire Modification in Place
- Lighting alterations that would directly cause the disturbance of asbestos. However, lighting alterations made in conjunction with asbestos abatement shall comply with the applicable requirements
- Portable luminaires, luminaires affixed to moveable partitions, and lighting excluded in Section 140.6



Lighting Alterations

Lighting system alterations

- Lighting System Alterations are alterations where an existing lighting system is modified, luminaires are replaced, or luminaires are disconnected from the circuit, removed and reinstalled, whether in the same location or installed elsewhere.



Lighting Alterations

Luminaire modifications in place

- Luminaire Modifications in Place are alterations where luminaires are modified by one or more of the following methods:
 - Replacing lamps and ballasts with like type or quantity in a manner that preserves the original luminaire listing.
 - Changing the number or type of light source in a luminaire including: socket renewal, removal or relocation of sockets or lampholders, and/or related wiring internal to the luminaire including the addition of safety disconnecting devices.
 - Changing the optical system of a luminaire in part or in whole.



Lighting Alterations

Luminaire modifications in place

- Are not part of or the result of any general remodeling or renovation of the enclosed space in which they are located
 - Are not the cause, result of, or involve any changes to the panelboard or branch circuit wiring, including line voltage switches, relays, contactors, dimmers and other control devices providing power to the lighting system.
- Lighting alterations which do not qualify as Luminaire Modifications in Place shall be classified as Lighting System Alterations.



Lighting Alterations

Wiring Alterations

- Adding a circuit feeding luminaires.
- Modifying or relocating wiring to provide power to new or relocated luminaires.
- Replacing wiring between a switch or panelboard and luminaire(s).
- Replacing or installing a new panelboard feeding lighting systems.



Lighting Alterations

Exceptions to Wiring Alterations

- Circuit modifications strictly limited to the addition of occupancy or vacancy sensors and class two lighting controls



Thresholds When Alterations in Effect

Luminaire Modifications in Place shall meet the applicable requirements in TABLE 141.0-F

- EXCEPTION - In a building space, as defined below, where a sum total of less than 40 Luminaire Modifications in Place are planned, or are affected, within a 12 month period.
 - 1. A complete single story building
 - 2. A complete floor of a multifloor building
 - 3. The entire space in a building of a single tenant under a single lease
 - 4. All of the common, not leasable space in single building



Thresholds When Alterations in Effect

In EACH ALTERED SPACE (room enclosed by ceiling height partitions)

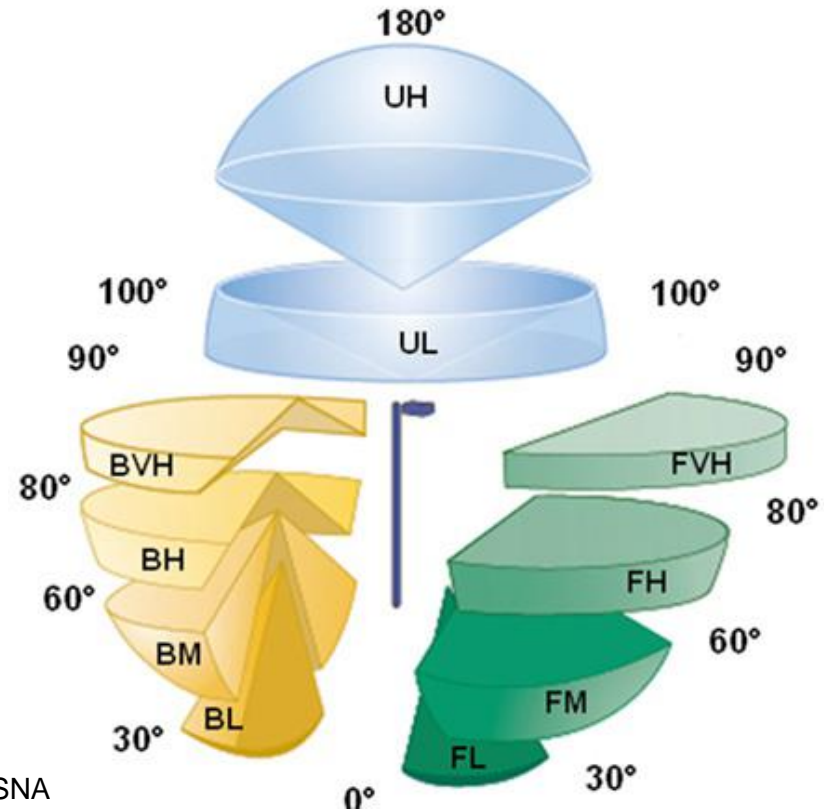
- Lighting Systems Alterations
 - ≥ 10% of the luminaires
- Luminaire Modifications in Place
 - ≥ 10% of the luminaires
 - When 40 Luminaire Modifications in Place are planned, or are affected, in a building space, within a 12 month period.



IESNA BUG Ratings

- Title 24, Part 6 contains mandatory requirements for:
 - Uplight (UL, UH zones)
 - Forward light (FH, FVH)
 - NO Backlight (BH, BVH)

Part 11 has
BUG requirements



Source: IESNA



CA Quality LED Specification

- For line-voltage replacement LED lamps
 - E11, E12, E17, E26, GU-24, GU-10, including recessed cans
- Efficacy requirements the same as ENERGY STAR
- Quality requirements go beyond ENERGY STAR
 - Dimming
 - Beam shape
 - Color appearance (CCT, binning)
 - Color rendering (CRI)
- Utility programs are rebating only compliant LED lamps



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