

This guide is a summary only and does not cover all the electrical code requirements and exceptions nor the energy code requirements or code exceptions for a home.

ENERGY CODE LIGHTING REQUIREMENTS

2016 California Energy Code Section 6.1.2 2008 Residential Compliance Manual (RCM)

SIGNIFICANT CHANGES IN THE 2016 ENERGY STANDARDS

The 2016 Energy Standards have simplified the residential lighting requirements.

All luminaires installed in residential construction must qualify as “high efficacy luminaires.” This eliminates varying requirements by room and type of controls. It also eliminates the need to calculate wattage of low vs. high efficacy luminaires in the kitchen.

Summary of Compliant Luminaire Types

High Efficiency Luminaires:

- Pin-based linear Fluorescent
- Pin-based compact Fluorescent
- Pulse-start metal halide
- High pressure sodium
- GU-24 other than LEDs
- Inseparable SSL luminaires installed outdoors
- Inseparable SSL luminaires with colored light sources for decorative lighting purpose

JA8 High Efficacy Lighting – Lamps & Light Sources that must be JA8-certified

- Light sources in ceiling recessed downlight luminaires
- LED luminaires with integral sources
- Screw-based LED lamps (A-lamps, PAR lamps, etc.)
- Pin-based LED lamps (MR-16, AR-111, etc.)
- GU-24 based LED light source
- Any source or luminaire not listed elsewhere in this table

Recessed Downlight Luminaires in Ceilings

- Shall not have screw-based sockets
- Shall contain JA8-certified light sources
- Shall meet all performance requirements in §150.5(k)1C

6.1.2 Recessed Downlight Luminaires in Ceilings

In addition to high efficacy, all recessed downlight luminaires must contain a light source or lamp that is JA8-certified, such as an integral LED source, or LED lamp. However, screw-based lamps such as LED A-lamps or LED PAR lamps are not allowed. Pin-based lamps such as LED MR-16 lamps are allowed in recessed fixtures as long as they are JA8-certified.

6.3 INDOOR LIGHTING CONTROLS REQUIREMENTS

The use of lighting controls is an important component of the Energy Standards.

6.3.1 Requirements of Controls Devices

Manual-on/automatic-off occupant sensors (also known as vacancy sensors), motion sensors, photo-control astronomical time clock controls (used for outdoor lighting), and dimmers installed to comply with §150.0(k) must have been certified to the Energy Commission by their manufacturer, pursuant to the provisions of the Title 20 Appliance Efficiency Regulations (Title 20 California Code of Regulations, §1606) as required by §110.9.

6.3.1.1 Requirements for Dimmers

In addition to meeting the applicable requirements of the Appliance Standards, all forward phase cut dimmers must comply NEMA SSL 7A. This designation is typically noted on equipment cut sheets or dimmer packaging and ensures compatibility with solid state lighting (including LEDs).

6.3.3 Spaces Required to Have Vacancy Sensors

Manual-on/automatic-off occupant sensors, also known as vacancy sensors, automatically turn lights off if an occupant forgets to turn them off when a room is unoccupied. Additionally, these sensors are required to provide the occupant with the ability to manually turn the lights:

1. Off upon leaving the room.
2. Off while still occupying a room.
3. On upon entering the room.

The manual-off feature is critical because it provides the occupants with the flexibility to control the lighting environment to their satisfaction, and results in greater energy savings by allowing the occupants to turn off the lights when they are not needed.

The Energy Standards require vacancy sensors to control at least one luminaire in the following room types:

Bathrooms, utility rooms, laundry rooms, garages.

6.5 OUTDOOR LIGHTING REQUIREMENTS

Outdoor residential lighting is sometimes subject to the residential lighting requirements, and sometimes subject to the nonresidential lighting requirements.

6.5.1 Outdoor Luminaires

All lighting attached to the residence or to other buildings on the same lot must be high efficacy. Table 150.0-A lists all qualifying high efficacy light sources. Note that solid state lighting (SSL) luminaires installed outdoors are exempted from the general residential lighting requirement that all SSL luminaires for residential lighting must meet the requirements of Joint Appendix JA8.

ELECTRIC CODE REQUIREMENTS

2016 California Electrical Code (CEC)

Branch Circuit Extensions or Modifications – Dwelling Units. In any of the areas specified in 210.12(A), where branch-circuit wiring is modified, replaced or extended, the branch circuit shall be protected by one of the following:

1. A listed combination-type AFCI located at the origin of the branch circuit
2. A listed out branch-circuit type AFCI located at the first receptacle outlet of the existing branch circuit.

Exception: AFCI protection shall not be required where the extension of the existing conductor is not more than 1.8 m (6 ft) and does not include any additional outlets or devices.

210.12 Arc-Fault Circuit-Interrupter Protection. Arc-fault circuit-interrupter protection shall be provided as required in 210.12(A) (B), and (C). The arc-fault circuit interrupter shall be installed in a readily accessible location.

DWELLING UNITS. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit, kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6).

DWELLING UNITS CIRCUITS

- (1) **Small Appliance Branch Circuits.** In addition to the number of branch circuits required by other parts of this section, two or more 20-ampere small-appliance branch circuits shall be provided for all receptacle outlets specified by 210.52(B).
- (2) **Laundry Branch Circuits.** In addition to the number of branch circuits required by other parts of this section, at least one additional 20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s) required by 210.52(F). This circuit shall have no other outlets.
- (3) **Bathroom Branch Circuits.** In addition to the number of branch circuits required by other parts of this section, at least one 120-volt, 20-ampere branch circuit shall be provided to supply a bathroom receptacle outlet(s). Such circuits shall have no other outlets.

Exception: Where the 20-ampere circuit supplies a single bathroom, outlets for other equipment within the same bathroom shall be permitted to be supplied in accordance with 210.23(A)(1) and (A)(2).

TAMPER-RESISTANT RECEPTACLES. Tamper-resistant receptacles shall be installed as specified in 406.12(A) through (C).

- A. Dwelling Units.** In all areas specified in 2010.52, all non-locking-type 125-volt, 15- and 20-ampere receptacles shall be listed tamper-resistant receptacles.
- B. Guest Rooms & Guest Suites of Hotels & Motels.** All non-locking-type 125-volt, 15- and 20-ampere receptacles located in guest rooms and guest suites of hotels and motels shall be tamper-resistant receptacles.
- C. Child Care Facilities.** In all child care facilities, all non-locking-type 125-volt, 15- and 20-ampere receptacles shall be listed tamper-resistant receptacles.

Guide to Residential Lighting & Electrical



THE CITY OF
NOVATO
CALIFORNIA

**Community Development Department
Building Division
922 Machin Avenue
Novato, CA 94945
Phone: (415) 899-8989
Fax: (415) 899-8216
novato.org/building
buildingpermits@novato.org**