The design and installation of all lighting systems and equipment in non-residential, high-rise residential, hotel/motel buildings, outdoor lighting, and electrical power distribution systems—subject to the California Energy Code, Title 24, Part 6—shall comply with the applicable provisions of Sections 130.0 through 130.5.

SECTION 130.0: LIGHTING CONTROLS AND EQUIPMENT

FUNCTIONAL AREAS WHERE COMPLIANCE WITH THE RESIDENTIAL LIGHTING STANDARDS IS REQUIRED

- High-rise residential dwelling units
- Outdoor lighting that is attached to a high-rise residential or hotel/motel building and is separately controlled from the inside of a dwelling unit or guest room.
- Fire station dwelling accommodations.
- Hotel and motel guest rooms.
- Dormitory and senior housing dwelling accommodations.

LUMINAIRE CLASSIFICATION AND POWER

Luminaires shall be classified and wattage determined as follows:

- The maximum re-lamping rated wattage of a luminaire shall be listed on a permanent, pre-printed, factory-installed label.
- The factory-installed maximum re-lamping rated wattage label shall not consist of peel-off or peel-down layers or other methods that allow the rated wattage to be changed after the luminaire has been shipped from the manufacturer.
For luminaires with line voltage lamp holders not containing permanently installed ballasts or transformers, the wattage of such luminaires shall be determined as follows:

- The maximum re-lamping rated wattage of the luminaire
- For recessed luminaires with line-voltage medium screw base sockets, wattage shall not be less than 50 watts per socket
- Luminaires and luminaire housings designed to accommodate a variety of trims or modular components that allow the conversion between incandescent and any other lighting technology without changing the luminaire housing or wiring shall be classified as incandescent
- Screw-based adaptors shall not be used to convert an incandescent luminaire to any type of non-incandescent technology. Screw-based adaptors, including screw-base adaptors classified as permanent by the manufacturer, shall not be recognized for compliance with Part 6
- Luminaires and luminaire housings manufactured with incandescent screw base sockets shall be classified only as incandescent. Field modifications, including hard wiring of an LED module, shall not be recognized as converting an incandescent luminaire or luminaire housing to a non-incandescent technology for compliance with Part 6.
- LED modules having screw-bases including screw based pig-tails, screw-based sockets, or screw-based adaptors shall not be recognized as a LED lighting system for compliance with Part 6
- Luminaires and luminaire housings equipped with screw-base sockets shall not be classified as a LED lighting system for compliance with Part 6
- Luminaires manufactured or rated for use with low-voltage incandescent lamps, into which have been installed LED modules or LED lamps, shall not be recognized as a LED lighting system for compliance with Part 6

**LIGHTING CONTROLS**

All lighting controls and equipment shall comply with the applicable requirements in Section 110.9 and shall be installed in accordance with the manufacturer's instructions.

**SECTION 130.1: INDOOR LIGHTING CONTROLS THAT SHALL BE INSTALLED**

**AREA CONTROLS**

- All luminaires shall be functionally controlled with manually switched ON and OFF lighting controls. Each area enclosed by ceiling-height partitions shall be independently controlled.

- The requirements are as follow:
  - Be readily accessible
  - Be operated with a manual switch that is located in the same room or area with the lighting that is controlled by that lighting control
  - If controlling dimmable luminaires, the dimmer switch must allow manual ON and OFF functionality, and it shall be capable of manually controlling lighting through all lighting control step

**OTHER LIGHTING CONTROLS**

- Other lighting controls may be installed in addition to the manual lighting controls, provided they do not override the functionality of the controls.
SEPARATELY CONTROLLED LIGHTING SYSTEMS

☐ In addition to the above, the following should be considered:
  o General lighting shall be separately controlled from all other lighting systems in an area
  o Floor and wall display, window display, case display, ornamental, and special effects lighting shall each be separately controlled on circuits that are 20 amps or less
  o When track lighting is used, general, display, ornamental, and special effects lighting shall each be separately controlled

MULTI-LEVEL LIGHTING CONTROLS

☐ The general lighting of any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot, shall meet the following requirements:
  o Control steps in accordance with TABLE 130.1-A
  o Multi-level lighting controls shall not override the functionally of other lighting controls
  o Each luminaire shall be controlled by at least one of the following methods:
    ▪ Manual dimming
    ▪ Lumen maintenance
    ▪ Tuning

SHUT-OFF CONTROLS

INDOOR LIGHTING

☐ All indoor lighting shall be equipped with controls that meet the following requirements:
  o Shall be controlled with an occupant sensing control, automatic time-switch control, signal from another building system, or other control capable of automatically shutting OFF all of the lighting when the space is typically unoccupied
  o Separate controls for the lighting on each floor
  o Separate controls for a space enclosed by ceiling height partitions not exceeding 5,000 square feet
  o Separate controls for general, display, ornamental, and display case lighting
    ▪ Exceptions:
      • Where the lighting is serving an area that is in continuous use, 24 hours per day and 365 days per year
      • In office buildings, up to 0.05 watts per square foot of lighting in any area within a building may be continuously illuminated, provided that the area is designated an emergency egress area on the plans and specification

COUNTDOWN TIMER SWITCHES

☐ Countdown timer switches shall not be used to comply with the automatic shut-OFF control requirements.
AUTOMATIC TIME-SWITCH CONTROL
☐ If an automatic time-switch control, other than an occupant sensing control, is installed to comply with shut-off controls:
  o It shall incorporate an override lighting control that complies with Area Control requirements
  o Allows the lighting to remain ON for no more than 2 hours when an override is initiated

☐ If an automatic time-switch control, other than an occupant sensing control, is installed 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.

OCCUPANT SENSING CONTROLS
☐ Areas where occupant sensing controls are required to shut off all lighting when the room is unoccupied:
  o In offices 250 square feet or smaller
  o Multipurpose rooms of less than 1,000 square feet
  o Classrooms of any size
  o Conference rooms of any size

☐ In addition, controls shall be provided that allow the lights to be manually shut-OFF in accordance with Area Controls regardless of the sensor status.

PARTIAL ON/OFF OCCUPANT SENSING CONTROLS
☐ Areas where partial ON/OFF occupant sensing controls are required:
  o In aisle ways and open areas in warehouses, lighting shall be controlled with occupant sensing controls that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing controls shall independently control lighting in each aisle way, and shall not control lighting beyond the aisle way being controlled by the sensor
  o In library book stack aisles 10 feet or longer that are accessible from only one end, and library book stack aisles 20 feet or longer that are accessible from both ends, lighting shall be controlled with occupant sensing controls that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing controls shall independently control lighting in each aisle way, and shall not control lighting beyond the aisle way being controlled by the sensor
  o Lighting installed in corridors and stairwells shall be controlled by occupant sensing controls that separately reduce the lighting power in each space by at least 50 percent when the space is unoccupied. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress
  o Areas where partial ON/OFF occupant sensing controls are required instead of complying with shut-off controls:
Lighting in stairwells and common area corridors that provide access to guestrooms and dwelling units of high-rise residential buildings and hotel/motels shall be controlled with occupant sensing controls that automatically reduce lighting power by at least 50 percent when the areas are unoccupied. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress.

In parking garages, parking areas and loading and unloading areas, general lighting shall be controlled by occupant sensing controls having at least one control step between 20 percent and 50 percent of design lighting power. No more than 500 watts of rated lighting power shall be controlled together as a single zone. A reasonably uniform level of illuminance shall be achieved in accordance with the applicable requirements in TABLE 130.1-A. The occupant sensing controls shall be capable of automatically turning the lighting fully ON only in the separately controlled space, and shall be automatically activated from all designed paths of egress. Interior areas of parking garages are classified as indoor lighting. Parking areas on the roof of a parking structure are classified as outdoor hardscape.

REQUIREMENTS AT HOTELS/MOTELS
- Hotel/motel guest rooms shall have captive card key controls, occupancy sensing controls, or automatic controls such that, for whatever option, no longer than 30 minutes after the guest room has been vacated, lighting power should be switched off.

AUTOMATIC DAYLIT CONTROLS
- Daylight Zones are defined as follows:

SKYLIT
- The rough area in plan view under each skylight, plus 0.7 times the average ceiling height in each direction from the edge of the rough opening of the skylight, minus any area on a plan beyond a permanent obstruction.

PRIMARY SIDELIT
- The area on a plan directly adjacent to each vertical glazing, one window head height deep into the area, and window width plus 0.5 times window head height wide on each side of the rough opening of the window, minus any area on a plan beyond a permanent obstruction that is 6 feet or taller as measured from the floor.
SECONDARY SIDELIT

- The area on a plan directly adjacent to each vertical glazing, two window head heights deep into the area, and window width plus 0.5 times window head height wide on each side of the rough opening of the window, minus any area on a plan beyond a permanent obstruction that is 6 feet or taller as measured from the floor.
  - Note: Modular furniture walls shall not be considered a permanent obstruction.
  - Luminaires providing general lighting that are in or are partially in the Skylit Daylit Zones or the Primary Sidelit Daylit Zones shall be controlled independently by fully functional automatic daylighting controls, and the applicable requirements below:
    - All Skylit Daylit Zones and Primary Sidelit Daylit Zones shall be shown on the plans
    - Luminaires in the Skylit Daylit Zone shall be controlled separately from those in the Primary Sidelit Daylit Zones
    - Luminaires that fall in both a Skylit and Primary Sidelit Daylit Zone shall be controlled as part of the Skylit Daylit Zone

AUTOMATIC DAYLIGHTING CONTROL INSTALLATION AND OPERATION

- For luminaires in daylight zones, automatic daylighting controls shall be installed and configured to operate according to all of the following requirements:
  - Photosensors shall be located so that they are not readily accessible to unauthorized personnel, and the location where calibration adjustments are made to automatic daylighting controls shall not be readily accessible to unauthorized personnel
  - Automatic daylighting controls shall provide functional multilevel lighting having at least the number of control steps specified in Table 130.1-A

PARKING GARAGE DAYLIGHT REQUIREMENTS

- In a parking garage area with a combined total of 36 square feet or more of glazing or opening, luminaires providing general lighting that are in the combined primary and secondary sidelit daylit zones shall be controlled independently by automatic daylighting controls, and shall meet the following requirements as applicable:
  - All primary and secondary sidelit daylit zones shall be shown on the plans
  - Automatic Daylighting Control Installation and Operation. Automatic daylighting control shall be installed and configured to operate according to all of the following requirements:
    - Automatic daylighting controls shall have photosensors that are located so that they are not readily accessible to unauthorized personnel, and the location where calibration adjustments are made to the automatic daylighting controls shall not be readily accessible to unauthorized personnel
    - Automatic daylighting controls shall be multi-level, continuous dimming or ON/OFF
    - The combined illuminance from the controlled lighting and daylight shall not be less than the illuminance from controlled lighting when no daylight is available.
    - When primary sidelit zones receive illuminance levels greater than 150 percent of the illuminance provided by the controlled lighting when no daylight is available, the controlled lighting power consumption shall be zero
DEMAND RESPONSIVE CONTROLS

- Lighting power in buildings larger than 10,000 square feet shall be capable of being automatically reduced in response to a Demand Response Signal, so that the building's total lighting power can be lowered by a minimum of 15 percent below the total installed lighting power. Lighting shall be reduced in a manner consistent with uniform level of illumination requirements in Table 130.1-A.

- Spaces that are non-habitable shall not be used to comply with this requirement, and spaces with a lighting power density of less than 0.5 watts per square foot shall not be counted toward the building's total lighting power.

**Table 130.1-A – Multi-Level Lighting Controls and Uniformity Requirements**

<table>
<thead>
<tr>
<th>LUMINAIRE TYPE</th>
<th>MINIMUM REQUIRED CONTROL STEPS (% OF FULL RATED POWER) 1</th>
<th>UNIFORM LEVEL OF ILLUMINANCE SHALL BE ACHIEVED BY:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line-voltage sockets except GU-24</td>
<td>Continuous dimming 10% - 100%</td>
<td></td>
</tr>
<tr>
<td>Low-Voltage incandescent systems</td>
<td>Continuous dimming 20% - 100%</td>
<td></td>
</tr>
<tr>
<td>LED luminaires and LED source systems</td>
<td>Minimum one step between 30% - 70%</td>
<td>Step dimming; continuous dimming; switching alternate lamps in a luminaire</td>
</tr>
<tr>
<td>GU-24 rated for LED</td>
<td>Minimum one step in each range</td>
<td>Step dimming; continuous dimming; switching alternate lamps in each luminaire having a minimum of 4 lamps per luminaire, illuminating the same area and in the same manner</td>
</tr>
<tr>
<td>GU-24 sockets rated for fluorescent &gt; 20 watts</td>
<td>Minimum one step between 30% - 70%</td>
<td>Step dimming; continuous dimming; separately switching circuits in multi-circuit track with a minimum of two circuits</td>
</tr>
<tr>
<td>Pin-based compact fluorescent &gt; 20 watts</td>
<td>Minimum one step between 30% - 70%</td>
<td>Step dimming; continuous dimming; switching alternate lamps in each luminaire, having a minimum of 2 lamps per luminaire, illuminating the same areas in the same manner</td>
</tr>
<tr>
<td>GU-24 sockets rated for fluorescent ≤ 20 watts</td>
<td>Minimum one step in each range</td>
<td></td>
</tr>
<tr>
<td>Pin-based compact fluorescent ≤ 20 watts</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>Linear fluorescent and U-bent fluorescent ≤ 13 watts</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>Linear fluorescent and U-bent fluorescent &gt; 13 watts</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>Track Lighting</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>HiD &gt; 20 watts</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>Induction &gt; 25 watts</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
<tr>
<td>Other light sources</td>
<td>Minimum one step between 50% - 70%</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 130.2: OUTDOOR LIGHTING AND EQUIPMENT

OUTDOOR INCANDESCENT LIGHTING

- All outdoor incandescent luminaires rated over 100 watts shall be controlled by a motion sensor.

LUMINAIRE CUT-OFF REQUIREMENTS

- All outdoor luminaires rated for use with lamps greater than 150 watts shall comply with Backlight, Uplight, and Glare (collectively referred to as "BUG") requirements as follows:
  - There are no Backlight requirements in Section 130.2 of Part 6
  - Maximum zonal lumens for Uplight shall be in accordance with Table 130.2-A
  - Maximum zonal lumens for Glare shall be in accordance with Table 130.2-B
  - EXCEPTIONS:
    - Signs, building facades, public monuments, statues, vertical surfaces of bridges, and temporary outdoor lighting
CONTROLS FOR OUTDOOR LIGHTING

- Outdoor lighting controls shall be installed that meet the following requirements:
  - All installed outdoor lighting shall be controlled by a photocontrol or outdoor astronomical time-switch control that automatically turns OFF the outdoor lighting when daylight is available
  - All installed outdoor lighting shall be circuited and independently controlled from other electrical loads by an automatic scheduling control
  - All installed outdoor lighting, where the bottom of the luminaire is mounted 24 feet or less above the ground, shall be controlled with automatic lighting controls that meet all of the following requirements:
    - Shall be motion sensors or other lighting control systems that automatically controls lighting in accordance with Cutoff Requirements in response to the area being vacated of occupants
    - Shall be capable of automatically reducing the lighting power of each luminaire by at least 40 percent but not exceeding 80 percent, or provide continuous dimming through a range that includes 40 percent through 80 percent
    - Shall employ auto-ON functionality when the area becomes occupied
    - No more than 1,500 watts of lighting power shall be controlled together.

- For Outdoor Sales Frontage, Outdoor Sales Lots, and Outdoor Sales Canopies lighting, an automatic lighting control shall be installed that meets the following requirements:
  - A part-night outdoor lighting control as defined in Section 100.1
  - Motion sensors capable of automatically reducing lighting power by at least 40 percent but not exceeding 80 percent, and which have auto-ON functionality

- For Building Facade, Ornamental Hardscape and Outdoor Dining lighting, an automatic lighting control shall be installed that meets one or more of the following requirements:
  - A part-night outdoor lighting control
  - Motion sensors capable of automatically reducing lighting power by at least 40 percent but not exceeding 80 percent, and which have auto-ON functionality
  - A centralized time-based zone lighting control capable of automatically reducing lighting power by at least 50 percent
  - Outdoor wall mounted luminaires having a bilaterally symmetric distribution as described in the IES Handbook (typically referred to as "wall packs") where the bottom of the luminaire is mounted 24 feet or less above the ground

- The Energy Commission defines the boundaries of Lighting Zones based on U.S. Census Bureau boundaries for urban and rural areas as well as the legal boundaries of wilderness and park areas. By default, government designated parks, recreation areas and wildlife preserves are Lighting Zone 1; rural areas are Lighting Zone 2; and urban areas are Lighting Zone 3. Lighting Zone 4 is a special use district that may be created by a local government.
### Table 130.2-A – Uplight Ratings (Maximum Zonal Lumens)

<table>
<thead>
<tr>
<th>SECONDARY SOLID ANGLE</th>
<th>MAXIMUM ZONAL LUMENS PER OUTDOOR LIGHTING ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLZ 1</td>
</tr>
<tr>
<td>Uplight High (UH) - 100 to 180 degrees</td>
<td>10</td>
</tr>
<tr>
<td>Uplight Low (UL) - 90 to &lt; 100 degrees</td>
<td>10</td>
</tr>
</tbody>
</table>

### Table 130.2-B – Glare Ratings (Maximum Zonal Lumens)

#### GLARE RATING FOR ASYMMETICAL LUMINAIRE TYPES (TYPE I, TYPE II, TYPE III, TYPE IV)

<table>
<thead>
<tr>
<th>SECONDARY SOLID ANGLE</th>
<th>MAXIMUM ZONAL LUMENS PER OUTDOOR LIGHTING ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLZ 1</td>
</tr>
<tr>
<td>Forward Very High (FVH) - 80 to 90 degrees</td>
<td>100</td>
</tr>
<tr>
<td>Backlight Very High (BVH) - 80 to 90 degrees</td>
<td>100</td>
</tr>
<tr>
<td>Forward High (FH) - 60 to &lt; 80 degrees</td>
<td>1,800</td>
</tr>
<tr>
<td>Backlight High (BH) - 60 to &lt; 80 degrees</td>
<td>500</td>
</tr>
</tbody>
</table>

#### GLARE RATING FOR ASYMMETICAL LUMINAIRE TYPES (TYPE V, TYPE V SQUARE)

<table>
<thead>
<tr>
<th>SECONDARY SOLID ANGLE</th>
<th>MAXIMUM ZONAL LUMENS PER OUTDOOR LIGHTING ZONE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLZ 1</td>
</tr>
<tr>
<td>Forward Very High (FVH) - 80 to 90 degrees</td>
<td>100</td>
</tr>
<tr>
<td>Backlight Very High (BVH) - 80 to 90 degrees</td>
<td>100</td>
</tr>
<tr>
<td>Forward High (FH) - 60 to &lt; 80 degrees</td>
<td>1,800</td>
</tr>
<tr>
<td>Backlight High (BH) - 60 to &lt; 80 degrees</td>
<td>1,800</td>
</tr>
</tbody>
</table>

### SECTION 130.3: SIGN LOCATION CONTROLS

#### CONTROLS FOR SIGN LIGHTING

- All sign lighting shall meet the requirements below, as applicable:

  **INDOOR SIGNS**
  - All indoor sign lighting shall be controlled with an automatic time-switch control or astronomical time-switch control

  **OUTDOOR SIGNS**
  - Outdoor sign lighting shall meet the following requirements, as applicable:
    - All outdoor sign lighting shall be controlled with a photo control in addition to an automatic time-switch control, or an astronomical time-switch control
    - All outdoor sign lighting that is ON both day and night shall be controlled with a dimmer that provides the ability to automatically reduce sign lighting power by a minimum of 65 percent during nighttime hours. Signs that are illuminated at night and for more than 1 hour during daylight hours shall be considered ON both day and night

  **DEMAND RESPONSIVE ELECTRONIC MESSAGE CENTER CONTROL (MEC)**
  - An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW shall have a control installed that is capable of reducing the lighting power by a minimum of 30 percent when receiving a demand response signal.
SECTION 130.4: LIGHTING CONTROL ACCEPTANCE AND INSTALLATION CERTIFICATE REQUIREMENTS

LIGHTING CONTROL ACCEPTANCE REQUIREMENTS

☐ Before an occupancy permit is granted for a newly constructed building or area, or a new lighting system serving a building, area, or site is operated for normal use, indoor and outdoor lighting controls serving the building, area, or site shall be certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4.

☐ A Certificate of Acceptance shall be submitted that:
  o Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of Part 6
  o Completes the applicable procedures in the Reference Nonresidential Appendix, and submits all applicable compliance forms
  o Certifies automatic daylight controls
  o Certifies lighting shut-OFF controls
  o Certifies demand responsive controls
  o Certifies outdoor lighting controls

LIGHTING CONTROL INSTALLATION CERTIFICATE REQUIREMENTS

☐ To be recognized for compliance with Part 6 an Installation Certificate shall be submitted in accordance with Section 10-103(a) for any lighting control system, Energy Management Control System, track lighting integral current limiter, track lighting supplementary overcurrent protection panel, interlocked lighting system, lighting Power Adjustment Factor, or additional wattage available for a videoconference studio, in accordance with the following requirements, as applicable:
  o Certification of the lighting control system
  o Certification of the Energy Management Control System
  o Certification of the line-voltage track lighting integral current limiters
  o Certification of the line-voltage track lighting supplementary overcurrent protection panels
  o Certification of the interlocked lighting systems
  o Certification of the lighting controls installed to earn a lighting Power Adjustment Factor (PAF)
  o Certification of the additional lighting wattage installed for videoconference studio

WHEN CERTIFICATION IS REQUIRED BY TITLE 24, SECTION 10-103-A

☐ The acceptance testing specified by Section 130.4 shall be performed by a Certified Lighting Controls Acceptance Test Technician (CLCATT). If the CLCATT is operating as an employee, the CLCATT shall be employed by a Certified Lighting Controls Acceptance Test Employer. The CLCATT shall disclose on the Certificate of Acceptance a valid CLCATT certification identification number issued by an approved Acceptance Test Technician Certification Provider.

☐ The CLCATT shall complete all Certificate of Acceptance documentation in accordance with the applicable requirements in Section 10-103(a)4.
SECTION 130.5: ELECTRICAL POWER DISTRIBUTION SYSTEMS

SERVICE METERING

☐ Each electrical service shall have permanently installed user-accessible metering of total electrical energy use per Table 130.5-A.

DISAGGREGATION OF ELECTRICAL CIRCUITS

☐ Electrical power distribution systems shall be designed to permit the disaggregated measurement of electrical load energy uses downstream from the service meter according to Table 130.5-B. Additive and subtractive methods may be used to determine aggregate and disaggregated energy use. This may be accomplished by any of the following methods:
  o Separate switchboards, motor control centers, or panelboards to which are connected only the required load or group of loads
  o Subpanels of the above to which are connected only the required load or group of loads and for which the subpanel load can be independently measured in aggregate
  o Branch circuits, taps or disconnects requiring overcurrent protection devices rated 60 amperes or greater

EXCEPTIONS

SECTION 130.5(A)

☐ Buildings for which the utility company provides a meter for occupant or user use that indicates instantaneous kW demand and kWh for a user-resettable period.

EXCEPTION 1

☐ Buildings for which a complete metering and measurement system is provided that at a minimum measures and reports the loads called for in Table 130.5-B.

EXCEPTION 2

☐ Alterations where all of the following conditions exist are not required to comply with this section:
  o The following existing equipment remains in place:
    ▪ Service distribution switchboards or panelboards
    ▪ Feeders
    ▪ Motor control centers or panelboards.
  o Existing equipment included above remains unaltered except for:
    ▪ Changes to load circuit connections
    ▪ Changes to the quantity of outgoing overcurrent protection devices
    ▪ Changes to the ampacity of outgoing overcurrent protection devices
VOLTAGE DROP

FEEDERS
☐ Feeder conductors shall be sized for a maximum voltage drop of 2 percent at design load.

BRANCH CIRCUITS
☐ Branch circuit conductors shall be sized for a maximum voltage drop of 3 percent at design load.
   o EXCEPTION: Feeder conductors and branch circuits that are dedicated to emergency services.

CIRCUIT CONTROLS FOR 120-VOLT RECEPTACLES
☐ In all buildings, both controlled and uncontrolled, 120-volt receptacles shall be provided in each private office, open office area, reception lobby, conference room, kitchenette in office spaces, and copy room. Controlled receptacles shall meet the following requirements:
   o Electric circuits serving controlled receptacles shall be equipped with automatic shut-OFF controls
   o At least one controlled receptacle shall be installed within 6 feet from each uncontrolled receptacle or a split-wired duplex receptacle with one controlled and one uncontrolled receptacle shall be installed
   o Controlled receptacles shall have a permanent marking to differentiate them from uncontrolled receptacles
   o For open office areas, controlled circuits shall be provided and marked to support installation and configuration of office furniture with receptacles
   o For hotel and motel guest rooms at least one-half of the 120-volt receptacles in each guest room shall be controlled receptacles
   o Electric circuits serving controlled receptacles shall have captive card key controls, occupancy sensing controls, or automatic controls such that, no longer than 30 minutes after the guest room has been vacated, power is switched off.
Energy Code – Lighting & Electrical – Non-Residential

- Plug-in strips and other plug-in devices that incorporate an occupant sensor shall not be used to comply with this requirement.
  - **EXCEPTION 1:**
    - In open office areas, controlled circuit receptacles are not required if, at time of final permit, workstations are installed, and each workstation is equipped with an occupant sensing control that is permanently mounted in each workstation, and which controls a hardwired, nonresidential-rated power strip. Plug-in strips and other plug-in devices that incorporate an occupant sensor shall not be used for this exception.
  - **EXCEPTION 2:**
    - Receptacles that are only for the following purposes:
      - Receptacles specifically for refrigerators and water dispensers in kitchenettes
      - Receptacles located a minimum of six feet above the floor that are specifically for clocks
      - Receptacles for network copiers, fax machines, A/V and data equipment other than personal computers in copy rooms
      - Receptacles on circuits rated more than 20 amperes

**DEMAND RESPONSIVE CONTROLS AND EQUIPMENT**
- Demand responsive controls and equipment shall be capable of receiving and automatically responding to at least one standards based messaging protocol which enables demand response after receiving a demand response signal.

**ENERGY MANAGEMENT CONTROL SYSTEMS (EMCS)**
- An EMCS may be installed to comply with the requirements of one or more lighting controls if it meets the following minimum requirements:
  - Provides all applicable functionality for each specific lighting control or system for which it is installed in accordance with Section 110.9
  - Complies with all applicable Lighting Control Installation Requirements in accordance with Section 130.4 for each specific lighting control or system for which it is installed
  - Complies with all applicable application requirements for each specific lighting control or system for which it is installed, in accordance with Part 6
  - An EMCS may be installed to comply with the requirements of a thermostat if it complies with all applicable application requirements for each thermostat in accordance with Part 6

**Table 130.5-A – Minimum Requirements for Metering of Electrical Load**

<table>
<thead>
<tr>
<th>METER TYPE</th>
<th>SERVICES RATED 50kVA OR LESS</th>
<th>SERVICES RATED MORE THAN 50kVA AND LESS THAN OR EQUAL TO 250kVA</th>
<th>SERVICES RATED MORE THAN 250kVA AND LESS THAN OR EQUAL TO 1000kVA</th>
<th>SERVICES RATED MORE THAN 1000kVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous (at the time) kW demand</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Historical peak demand (kW)</td>
<td>Not Required</td>
<td>Not Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Resettable kWh</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>kWh per rate period</td>
<td>Not Required</td>
<td>Not Required</td>
<td>Not Required</td>
<td>Required</td>
</tr>
</tbody>
</table>

City of Palo Alto Development Services Building Division – 285 Hamilton Av. (First Floor), Palo Alto, CA 94301 – (650) 329-2496
<table>
<thead>
<tr>
<th>LOAD TYPE</th>
<th>SERVICES RATED 50kVA OR LESS</th>
<th>SERVICES RATED MORE THAN 50kVA AND LESS THAN OR EQUAL TO 250kVA</th>
<th>SERVICES RATED MORE THAN 250kVA AND LESS THAN OR EQUAL TO 1000kVA</th>
<th>SERVICES RATED MORE THAN 1000kVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lighting including exit and egress lighting and exterior lighting</td>
<td>Not required</td>
<td>All lighting in aggregate</td>
<td>All lighting disaggregated by floor, type, or area</td>
<td>All lighting disaggregated by floor, type, or area</td>
</tr>
<tr>
<td>HVAC systems and components including chillers, fans, heaters, furnaces, package units, cooling towers, and circulation pumps associated with HVAC</td>
<td>Not required</td>
<td>All HVAC in aggregate</td>
<td>All HVAC in aggregate and each HVAC load rated at least 50kVA</td>
<td>All HVAC in aggregate and each HVAC load rated at least 50kVA</td>
</tr>
<tr>
<td>Domestic and service water system pumps and related systems and components</td>
<td>Not required</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
</tr>
<tr>
<td>Plug load including appliances rated less than 25kVA</td>
<td>Required</td>
<td>All plug load in aggregate. Groups of plug loads exceeding 25kVA connected load in an area less than 5,000 SF</td>
<td>All plug load separated by floor, type, or area. Groups of plug loads exceeding 25kVA connected load in an area less than 5,000 SF</td>
<td>All plug load separated by floor, type, or area. Groups of plug loads exceeding 25kVA connected load in an area less than 5,000 SF</td>
</tr>
<tr>
<td>Elevators, escalators, moving walks, and transit systems</td>
<td>Not required</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
</tr>
<tr>
<td>Other individual non-HVAC loads or appliances rated 25kVA or greater</td>
<td>Not required</td>
<td>All</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Industrial and commercial load centers 25kVA or greater including theatrical lighting installations and commercial kitchens</td>
<td>Not required</td>
<td>All</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Renewable power source (net or total)</td>
<td>Each group</td>
<td>Each group</td>
<td>Each group</td>
<td>Each group</td>
</tr>
<tr>
<td>Loads associated with renewable power source</td>
<td>Not required</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
</tr>
<tr>
<td>Charging stations for electric vehicles</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
<td>All loads in aggregate</td>
</tr>
</tbody>
</table>