California Energy Commission
DOCKETED
15-BSTD-01
TN 75948
JUN 09 2015

6. Certification that lighting controls installed to earn a lighting Power Adjustment Factor (PAF) comply with Section 140.6(a)2; and comply with Reference Nonresidential Appendix NA7.7.6. move to 130.4(a)

7. Certification that additional lighting wattage installed for a videoconference studio complies with Section 140.6(c)2Gvii; and complies with Reference Nonresidential Appendix NA7.7.7.

(e) When certification is required by Title 24, Part 1, Section 10-103~~-A~~.1, 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.

NOTE: Authority: Sections 25402, 25402.1, 25213, Public Resources Code. Reference: Sections 25007, 25402(a)-(b), 25402.1, 25402.4, 25402.5, 25402.8 and 25910, Public Resources Code.

SECTION 130.5 –ELECTRICAL POWER DISTRIBUTION SYSTEMS

Nonresidential, high-rise residential and hotel/motel buildings shall comply with the applicable requirements of Sections 130.5(a) through 130.5(~~c~~d).

Clarify "or"

Define "feeder".

(a) ~~**Service**~~ Service **Electrical Metering.** Each electrical service or feeder shall have a permanently installed ~~user accessible~~ metering system which measures ~~of total~~ electrical energy use ~~per~~in accordance with TABLE 130.5-A. The Table 130.5 A is only for Services.

~~1. The electrical usage shall be recorded a minimum of every 15 minutes and reported at least hourly, daily, monthly, and annually. The metering system shall be capable of maintaining all data collected for a minimum of 36 months.~~

~~2. For buildings with tenants, the distribution systems shall be separately monitored for the total building and for each individual tenant space. The data for each tenant space shall be made available to that tenant.~~

EXCEPTION to Section 130.5(a): ~~Buildings~~ Service or feeder for which the utility company provides a metering system ~~capable of electrical energy measurement in accordance with TABLE 130.5-A requirements for occupant or user use that indicates instantaneous kW demand and kWh for a user resettable period~~that indicates instantaneous kW demand and kWh for a utility-defined period.

~~**EXCEPTION to Section 130.5(a)1:** The following buildings and areas are not required to comply with this section:~~

~~1. Building less than 25,000 square feet;~~

~~2. Individual tenant areas less than 10,000 square feet;~~

~~3. Dwelling units;~~

~~4. Functional areas where compliance with the residential lighting standards is required in accordance with Section 130.0(b);~~

~~5. Residential buildings with less than 10,000 square feet or common area;~~

~~6. Critical and Equipment branches as defined by California Electrical Code.~~

(b) ~~**Disaggregation**~~ Separation **of Electrical Circuits** ~~/~~**for Electrical Energy Monitoring**. Electrical power distribution systems shall ~~allow installation of~~ be designed so that measurement devices ~~for~~ can monitor~~ing~~ the electrical energy usage of load types ~~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:~~

~~1. Separate s~~~~Switchboards, motor control centers, or panelboards loads shall be disaggregated~~ ~~to which are connected only the required load~~ ~~for each load type of TABLE 130.5-B allowing their independent energy measurement per TABLE 130.5-B. Up to 10 percent of the disaggregated connected load is permitted to be from any other disaggregated load types specified in TABLE 130.5-B~~ ~~or group of loads; or~~

~~2. Switchboards, motor control centers, or panelboards may supply other distribution equipments with their loads disaggregated for each load types in accordance with TABLE 130.5-B. The measured interval demand loads for each distribution equipment must be able to be added or subtracted from other distribution equipment supplying them. This method must permit permanent measurement and determination of actual interval demand load value for each disaggregated load in the system. Up to 10 percent of the disaggregated connected load type is permitted to be from any other disaggregated load types specified in TABLE 130.5-B~~~~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; or~~

~~3. 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~~~~Branch circuits, taps or disconnects requiring overcurrent protection devices rated 60 amperes or greater~~.

EXCEPTION to Section 130.5(b): For each separate load type, up to 10 percent of the connected load may be of any type.

~~**EXCEPTION 1 to Section 130.5(b)** 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 to Section 130.5(b)** Alterations where all of the following conditions exist are not required to comply with this section:~~

~~A. The following existing equipment remains in place:~~

~~i. Service distribution switchboards or panelboards; and~~

~~ii. Feeders; and~~

~~iii. Motor control centers or panelboards.~~

~~B. Existing equipment included in Item A (above) remains unaltered except for:~~

~~i. Changes to load circuit connections; or~~

~~ii. Changes to the quantity of outgoing overcurrent protection devices; or~~

~~iii. Changes to the ampacity of outgoing overcurrent protection devices.~~

(c) **Voltage Drop.**

~~-~~ The maximum ~~total~~ combined voltage drop on both installed feeder conductors and branch circuit conductors to the farthest connected load or outlet, shall not exceed 5 percent.

~~1. **Feeders.** Feeder conductors shall be sized for a maximum voltage drop of 2 percent at design load.~~

~~2. **Branch Circuits.** Branch circuit conductors shall be sized for a maximum voltage drop of 3 percent at design load.~~

~~**EXCEPTION 1 to Section 130.5(c): Feeder** conductors and branch circuits that are dedicated to fire pump emergency servicesystems.~~

EXCEPTION ~~2~~ to Section 130.5(c): Voltage ~~D~~drop permitted by California Electrical Code Sections 647.4, 695.6 and 695.7.

(d) **Circuit Controls for 120-Volt Receptacles and Controlled Receptacles** In all buildings, both controlled and uncontrolled 120 volt receptacles shall be provided in ~~each private office, open~~ office areas, ~~reception~~ lobbies, conference rooms, kitchen~~nette~~ areas in office spaces, and copy rooms. Additionally, hotel/motel guest rooms shall comply with ~~Item 5~~9 Section 130.5(d)4. Controlled receptacles shall meet the following requirements, as applicable:

not consistent with opening sentence.

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1. ~~Electric circuits serving controlled receptacles shall be equipped with~~Install ~~an occupant sensing control, automatic time switch control, or other~~a control capable of automatically shutting OFF the controlled receptacles when the space is typically unoccupied, either at the receptacle or circuit level.~~automatic shut-OFF controls following the requirements prescribed in Section 130.1(e)(1 through 5).~~When an automatic time switch control is installed it shall incorporate an override control that allows the controlled receptacle to remain ON for no more than 2 hours when an override is initiated and an automatic holiday "shut-OFF" feature that turns OFF all loads for at least 24 hours and then resumes the normally scheduled operation. Countdown timer switches shall not be used to comply with the automatic time switch control requirements; and

2. Install ~~A~~at least one controlled receptacle ~~shall be installed~~ within 6 feet from each uncontrolled receptacle, or install a splitwired ~~duplex~~ receptacle with at least one controlled and one uncontrolled receptacle. ~~shall be installed~~ Where receptacles are installed in modular furniture in open office areas, at least one controlled receptacle shall be installed at each workstation; and

3. ~~Controlled receptacles shall have~~Provide a permanent and durable marking for controlled receptacles or circuits to differentiate them from uncontrolled receptacles or circuits; and

~~4. If an automatic time switch control, other than an occupant sensing control, is installed to comply with Section 130.5(d)1, it shall incorporate an override control that allows the controlled receptacle to remain ON for no more than 2 hours when an override is initiated; and~~~~For open office areas, controlled circuits shall be provided and marked to support installation and configuration of office furniture with receptacles that comply with Section 130.5(d) 1, 2, and 3~~~~; and~~

~~5. If an automatic time switch control, other than an occupant sensing control, is installed to comply with Section 130.5(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.~~ ~~For hotel and motel guest rooms at least one-half of the 120-volt receptacles in each guest room shall be controlled receptacles that comply with Section 130.5(d)1, 2, and 3. 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.~~~~; and~~

~~6. Plug-in strips and other plug-in devices that incorporate an occupant sensor shall not be used to comply with this requirement; and.~~

~~7. Countdown timer switch shall not be used to comply with the requirements of Section 130.5(d)1; and~~

~~8. For open office areas, controlled circuits shall be provided and marked to support installation and configuration of office furniture with receptacles that comply with Section 130.5(d) 1, 2, 3, 4, 5, 6 and 7.~~

~~9~~4. For hotel and motel guest rooms, install controlled receptacles for at least one-half of the 120-volt receptacles in each guest room ~~shall be controlled receptacles that comply with Section 130.5(d)1, 2, and 3~~. Electric circuits serving controlled receptacles in guestrooms shall have captive card key controls, occupancy sensing controls, or automatic controls ~~such that~~ so the power is switched off no longer than 30 minutes after the guest room has been vacated~~, power is switched off~~.

NOTE: A hardwired power strip controlled by an occupant sensing control may be used to comply with Section 130.5(d). Plug-in strips and other plug-in devices shall not be used to comply with the requirements of this Section.

~~**EXCEPTION 1 to Section 130.5(d):** 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~~ to Section 130.5(d): Receptacles that are only for the following purposes:

i. Receptacles specifically for refrigerators and water dispensers in kitchen~~ette~~ areas.

ii. Receptacles located a minimum of six feet above the floor that are specifically for clocks.

iii. Receptacles for network copiers, fax machines, A/V and data equipment other than personal computers in copy rooms.

iv. Receptacles on circuits rated more than 20 amperes.

v. Receptacles connected to an uninterruptible power supply (UPS) that are intended to be in continuous use, 24 hours per day/365 days per year, and are marked to differentiate them from other uncontrolled receptacles or circuits.

(e) **Demand responsive controls and equipment.** Demand responsive controls and equipment, where installed, 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.

~~(f) **Energy Management Control System (EMCS).**~~

~~1. An EMCS may be installed to comply with the requirements of one or more lighting controls if it meets the following minimum requirements:~~

~~A. Provides all applicable functionality for each specific lighting control or system for which it is installed in accordance with Section 110.9; and~~

~~B. 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; and~~

~~C. Complies with all applicable application requirements for each specific lighting control or system for which it is installed, in accordance with Part 6.~~

~~2. 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.~~

NOTE: Definitions of terms and phrases in Section 130.5 are determined as specified in Section 100.1(b). Terms and phrases not found in Section 100.1(b) shall be defined as specified in Title 24, Part 3, Article 100 of the California Electrical Code.

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TABLE 130.5-A MINIMUM REQUIREMENTS FOR METERING OF ELECTRICAL LOAD

Metering ~~Type~~Functionality	**Electrical Services rated 50 kVA or less**	**Electrical Services rated more than 50kVA and less than or equal to 250 kVA**	**Electrical Services rated more than 250 kVA and less than or equal to 1000kVA**	**Electrical Services rated more than 1000kVA**
Instantaneous (at the time) kW demand	Required	Required	Required	Required
Historical peak demand (kW)	Not required	Not required	Required	Required
~~Resettable~~ Tracking kWh for a user-definable period.	Required	Required	Required	Required
kWh per rate period	Not required	Not required	Not required	Required

TABLE 130.5-B MINIMUM REQUIREMENTS FOR SEPARATION OF ELECTRICAL LOAD

Electrical Load Type	Electrical Services rated 50 kVA or less	Electrical Services rated more than 50kVA and less than or equal to 250 kVA	Electrical Services rated more than 250 kVA and less than or equal to 1000kVA	Electrical Services rated more than 1000kVA
Lighting including exit and egress lighting and exterior lighting	Not required	All lighting in aggregate	All lighting disaggregated by floor, type or area	All lighting disaggregated by floor, type or area
HVAC systems and components including chillers, fans, heaters, furnaces, package units, cooling towers, and circulation pumps associated with HVAC	Not required	All HVAC in aggregate	All HVAC in aggregate and each HVAC load rated at least 50 kVA	All HVAC in aggregate and each HVAC load rated at least 50kVA
Domestic and service water system pumps and related systems and components	Not required	All loads in aggregate	All loads in aggregate	All loads in aggregate
Plug load including appliances rated less than 25 kVA	Not required	All plug load in aggregate Groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf	All plug load separated by floor, type or area Groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf	All plug load separated by floor, type or area All groups of plug loads exceeding 25 kVA connected load in an area less than 5000 sf
Elevators, escalators, moving walks, and transit systems	Not required	All loads in aggregate	All loads in aggregate	All loads in aggregate
Other individual non-HVAC loads or appliances rated 25kVA or greater	Not required	All loads in aggregate	All loads in aggregate~~Each~~	All loads in aggregate~~Each~~
Industrial and commercial load centers 25 kVA or greater including theatrical lighting installations and commercial kitchens	Not required	All loads in aggregate	All loads in aggregate~~Each~~	All loads in aggregate~~Each~~
Renewable power source (net or total)	Each group	Each group	Each group	Each group
Loads associated with renewable power source	Not required	All loads in aggregate	All loads in aggregate	All loads in aggregate
Charging stations for electric vehicles	All loads in aggregate	All loads in aggregate	All loads in aggregate	All loads in aggregate

use consistent syntax

use "disaggregated" in order to be consistent with rest of the TABLE

Insert "period"

SECTION 130.5