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8. Electrical Power Distribution

This chapter describes the Title 24, Part 6, Building Energy Efficiency Standards (Energy Standards) requirements in §130.5 for energy efficiency measures used for electrical power distribution systems of nonresidential, high-rise residential, and hotel/motel occupancy buildings.

8.1 Overview

8.1.1 Summary of Changes in 2016

The changes for electrical power distribution systems in the 2016 update to the Energy Standards include:

- New definitions for Electrical Metering, Service, Service Equipment, Equipment, Plug Load, and Low Voltage Dry-Type Distribution Transformer are added to §100.1.
- New mandatory requirement for low-voltage dry-type distribution transformers as specified in new §110.11.
- Clarifications for the Service Metering requirement of §130.5(a).
- Clarifications for the Separation of Electrical Circuits requirement of §130.5(b) to allow flexible approaches for providing the ability to measure the separate loads of the building.
- Clarifications for the Voltage Drop requirement of §130.5(c) to allow a 5% overall voltage drop rather than split requirements for feeders and branch circuits.
- Clarifications for the Circuit and Receptacle Control for 120-Volt Receptacles requirement of §130.5(d).
- Relocation of the Energy Management of Control System (EMCS) requirement to §130.0.
- Clarification for alteration requirements for electrical power distribution systems in §141.0(b)2P.

8.1.2 Scope and Applications

The following requirements for electrical power distribution systems apply to all non-residential, high-rise residential, and hotel/motel buildings. All the requirements in §130.5 of Electrical Power Distribution Systems are mandatory, and therefore are not included in the energy budget for the performance compliance approach.

A. New Construction and Additions

The requirements of §130.5 apply to all newly constructed buildings and additions.

B. Alterations

The requirements for alterations to electrical power distribution systems are covered in §141.0(b)2P of the Energy Standards.

For alterations with entirely new or complete replacements of electrical power distribution systems, the requirements of §130.5(a) through (d) must be met; §130.5(e), relating to demand response controls, is not required for alterations.

For alterations of feeders and branch circuits, which includes adding, modifying, or replacing either feeders or branch circuits, the voltage drop requirements of §130.5(c) must be met. See Section 8.6 of this manual and §141.0(b)2P of the Energy Standards for details of the requirements for alterations to electrical power distribution systems.

C. Acceptance Testing, Commissioning, and Installation Certificates

The requirements of §130.5 and §141.0(b)2P are not subject to acceptance testing or commissioning requirements under the Energy Standards.

See Section 8.8 for more information on compliance and installation documentation.

8.2 Service Electrical Metering Requirements

§130.5(a)

Projects are required to provide an electrical metering system that measures the instantaneous power usage and the cumulative electrical energy being used by the building. For metering systems that are not provided by the serving utility company, requirements apply based on the service kVA as specified in Table 130.5-A and stated below:

- For electrical service rated at any kVA, the meter must be able to indicate instantaneous kW demand and KWh for a user-defined period.
- For electrical service rated more than 250 kVA, the meter must be able to measure historical peak demand in kilowatts.
- For electrical services rated more than 1000kVA, the meter must also be able to measure historical peak demand in kilowatts and kWh per rate period.

Utility-provided meters that indicate instantaneous kW demand and kWh for a utility-defined period are sufficient to meet this Section’s requirements, and are not required to measure historical peak demand. If the utility-provided meter does not indicate instantaneous kW demand and kWh for a utility-defined period, then a separate meter must also be installed that provides the full functionality required by § 130.5(a) and Table 130.5-A of the Energy Standards.

Each electrical service or feeder must have a permanently installed metering system that complies with these requirements. The terms “service” and “feeder” are both defined in regulation, the first in the Energy Standards and the latter in the California Electrical Code, as follows:

- "Service is the conductors and equipment for delivering electric energy from the serving utility to the wiring system of the premise served", as defined in §100.1 of the Energy Standards.
- “Feeder - All circuit conductors between the service equipment, the source of a separately derived system, or other power supply source and the final branch-circuit overcurrent device”, as defined in Article 100 of the 2016 California Electrical Code.

This is not a requirement to install meters both at the service and at each feeder. Rather, this requirement simply prevents unmetered service or feeder circuits from being installed within a building by requiring that a meter be installed at either the service level or, if not at the service level, at the feeder level, whatever is appropriate for the installation in question.

Example 8-1

Question:

There is one service to my building and the building fire pump is installed with the power connection tapped to the same service.

Do I need to install another meter for the fire pump, in addition to the service metering already provided by the local utility?

Answer:

No, it is not mandatory to provide another meter for the fire pump if it is using a service that is already connected to a meter. If it is not using a service that is already metered, then a separate meter may be required.

Example 8-2

Question:

There are two services provided by the local utility company to my building.

Do both services require meeting the service electrical metering requirement?

Answer:

Yes, it is mandatory to have one service electrical metering for each service in accordance with §130.5(a).

Example 8-3

Question:

I own a nonresidential building with four tenant units. The building has one service and there are four sets of meters and disconnect switches, one set for each tenant unit. The meters are provided by a local utility company, they provide the required kW and kWh information, and I intend to utilize the meters to meet the §130.5(a) requirement. Is this allowed by the regulations?

Answer:

Yes, metering each feeder instead of metering the service is allowed, and is intended to address situations where one service feeds to multiple tenants.

Example 8-4

Question:

I have a building with multiple tenant spaces and each individual tenant space is served by separate and individual feeders. There is an individual meter for each feeder. Do I have to install a separate meter at the building service to fulfill the §130.5(a) requirement?

Answer:

No, it is not necessary to install a separate metering system for the service if a) there are individual meters for all the feeders and b) all the meters meet the metering functionality requirements, based on the building service size, in Table 130.5-A of the Energy Standards.

8.3 Separation of Electrical Circuits for Electrical Energy Monitoring

§130.5(b)

The purpose of the Separation of Electrical Circuits requirement is to set up a backbone for monitoring the specific contributions of separate loads to the overall energy use of the building. By designing the electrical distribution system with separation of electrical loads in mind, energy monitoring can be readily setup and implemented without significant physical changes to the electrical installations. The end goal is to be able to monitor the electrical energy usage of each load type specified in Table 130.5-B of the Energy Standards: building owners, facility management, and others can make use of such energy usage information to better understand how much energy has been used by each building system during a certain period of time. Further analysis of such energy information can help facilitate energy efficiency measures to improve building energy performance for building owners and operators.

Example 8-5

Question:

My new nonresidential building is served by a single panel with a service less than 50 kVA.

What is the required separation of electrical circuit requirement for this building?

Answer:

Since the service is smaller than 50kVA, renewable power sources and electric vehicle charging stations shall be separated from other electrical load types and from each other, in accordance with the “Electrical Service rated 50kVA or less” column of Table 130.5-B and §130.5(b).

The renewable power source shall be separated by group. All electric charging vehicle loads can be in aggregate.

If there are no renewable power sources or electric vehicle charging stations in this building, it is not required to separate the electrical circuits for electrical energy monitoring purposes.

8.3.1 Compliance Methods

Electrical power distribution systems shall be designed so that measurement devices can monitor the electrical energy usage of load types according to Table 130.5-B. However, for each separate load type, up to 10 percent of the connected load may be of any other load type. Also, note that the 2016 requirements have moved to become more flexible than the 2013 requirements: where the 2013 Energy Standards prescribed specific methods for ensuring separation of electrical loads, the 2016 Energy Standards allow any approach that provides the ability to measure the separate loads of the building.

The separation of electrical circuit requirement of §130.5(b), may be accomplished by any of the following example methods:

A. **Method 1:** Switchboards, motor control centers, or panelboards loads can be disaggregated for each load type, allowing their independent energy measurement. This method must permit permanent measurement and determination of actual interval demand load value for each disaggregated load in the system.

   This is a straightforward approach, as each distribution equipment serves a single load type. Summation of the kVA measurement of the distribution equipment in accordance with the respective load type can result in the energy usage of each load type. This method is simple and straightforward in terms of the effort required in compiling the measurement data.

B. **Method 2:** Switchboards, motor control centers, or panelboards may supply other distribution equipment with their loads disaggregated for each load type. The measured interval demand load for each piece of 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.

   This method allows distribution equipment to serve more than one load type while still allowing the separate energy use of each load to be determined. More effort may be required in terms of treatment of the measured energy data in order to obtain the energy usage of each load type.

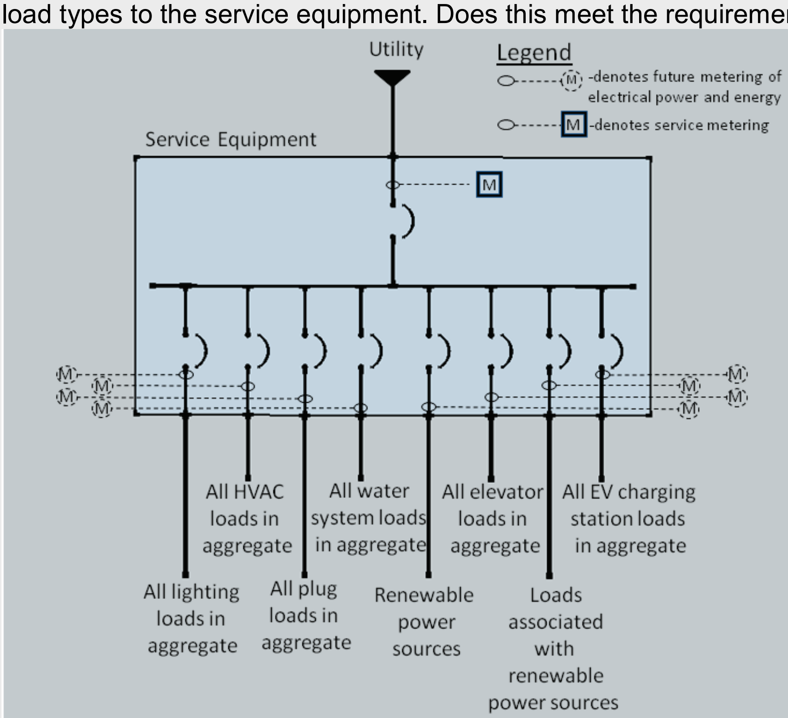
C. **Method 3:** Buildings for which a complete metering and measurement system is provided that at a minimum, measures and reports the loads by type.

   This method allows a complete metering system to be used to meet the requirements of §130.5(b), provided that at a minimum measures and reports the loads called for in Table 130.5-B of the Energy Standards. Such an installation goes beyond the requirement of the Energy Standards as it meters and measures the power and energy usage of each load type.

Example 8-6

Question:

I am working on a new building project of a nonresidential building with a service less than 250 kVA but more than 50kVA. Following is the proposed concept layout of separation of circuits for connecting different load types to the service equipment. Does this meet the requirements of the Energy Standards?



Answer:

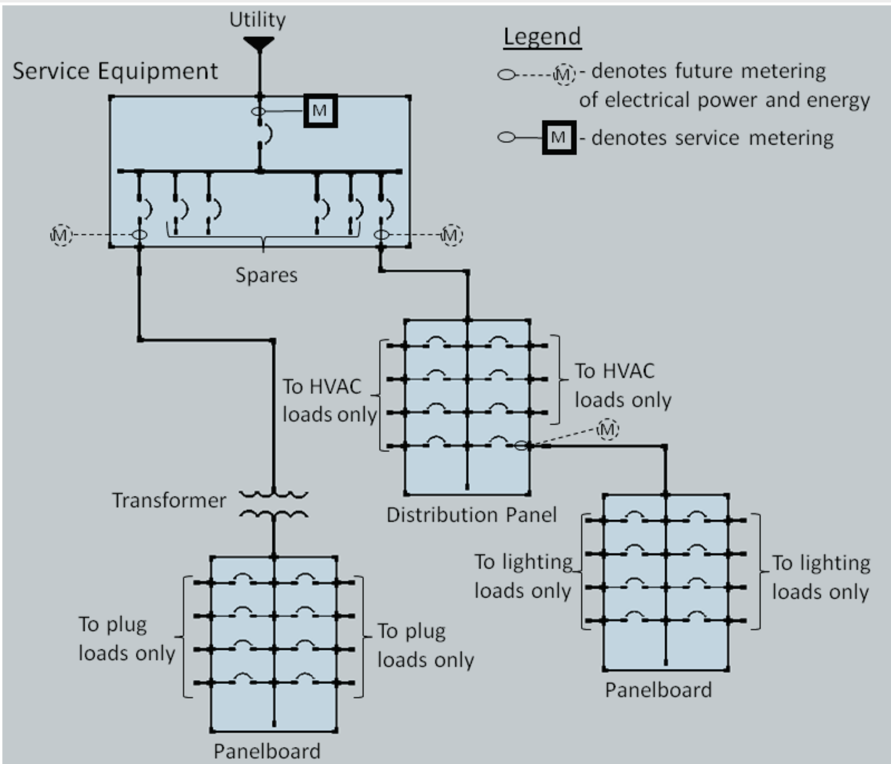
The proposed design meets the separation of electrical circuit requirement of §130.5(b) as there are separations of circuits for connecting different load types to the service equipment. There should be provisions including physical spaces for future setup of measurement devices for energy monitoring at each electrical installation location.

Example 8-7

Question:

Part of my proposed design is to use a distribution panel serving HVAC loads, with the panel also feeding a lighting panelboard. There is another, separate panelboard serving plug loads only.

Does this design meet the requirements of the Energy Standards?



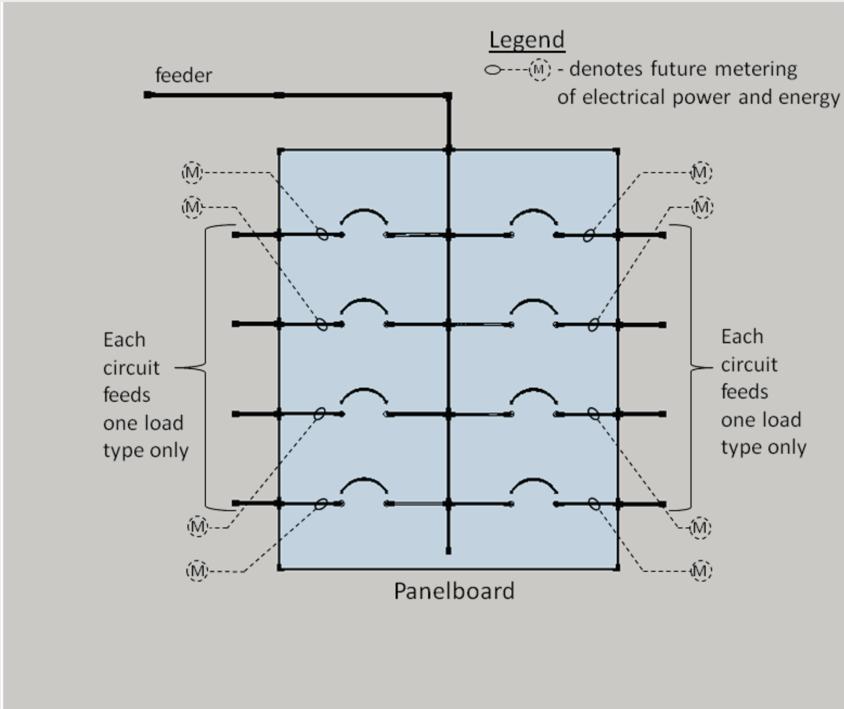
Answer:

The proposed design meets the separation of electrical circuit requirement of §130.5(b) as each load type of load in the building can be accounted for by addition and subtraction of the measured energy data as indicated in Method 2.

Example 8-8

Question:

Can a panelboard with provisions allowing branch circuit energy monitoring be used to meet the separation of electrical circuits requirement? Each circuit would serve no more than one load type. Does this design meet the requirements of the Energy Standards?



Answer:

The proposed design allows each load type to be separately measured for energy usage, and therefore meets the requirements of §130.5(b).

8.3.2 Application Considerations

The Energy Standards envision the use of conventional panelboards, motor control centers, panelboards, and other standard wiring methods for meeting the requirement to separate electrical loads. The requirement may also achieved by a well-planned wiring approach, such as connecting all HVAC units to a single feeder from the service using a combination of through feeds and taps. The regulations are intentionally written to specify the "what" without prescribing the "how", and thus provide as much flexibility as possible.

In a "typical" small building with a service less than 50kVA, separation of electrical loads is not required at all. Slightly larger buildings are able to comply by using carefully laid-out panelboards.

In larger buildings, separate risers for lighting, receptacles/equipment, and HVAC are allowed to be used for meeting the separation of electrical circuits requirement. Single large loads or groups of loads, such as an elevator machine room, or a commercial kitchen, may be connected to panelboards or motor control centers served by a dedicated feeder and the electrical power and energy of the entire group of loads can be measured by metering the feeder.

For services rated more than 250 kVA, lighting and plug loads are required to be separated "*by floor, type or area*". So, in a single-story building, all the lighting loads could be fed from a single panel, and all the plug loads could be fed from another panel (or, alternatively, both types of loads could be fed from one panel with a split bus).

In a multi-story building, a simple way to comply would be to install a separate lighting panel and a separate plug-load panel for each floor of the building. However, it would be equally acceptable (and may be more useful) to divide the load according to which area of the building it serves (office, warehouse, corridors etc.), or by the type of light fixture (metal halide vs. fluorescent, dimmable vs. fixed output, etc.). So, for instance, both the first and second floor office lights could be fed from the same panel, while the warehouse lights would be fed from a second panel. Dividing the load by area or by type instead of by floor is more likely to yield useful information when the loads are analyzed in an energy audit. All of these approaches are available to designers and installers, and are acceptable methods of complying with the Energy Standards.

8.4 Voltage Drop Requirements

§130.5(c)

The voltage drop requirement, which has been clarified and revised in the 2016 update of the Energy Standards, is as follows:

Voltage drop of feeder + Voltage drop of branch circuit ≤ 5%

The maximum combined voltage drop on both installed feeder conductors and branch circuit conductors to the farthest connected load or outlet must not exceed five percent. This is the steady-state voltage drop under normal load conditions.

The voltage drop requirements of the following California Electrical Code (CEC) sections are exempted from the requirement of §130.5(c):

1. Article 647, Sensitive Electronic Equipment, Section 647.4 Wiring Methods.
2. Article 695, Fire Pump, Section 695.6, Power Wiring.
3. Article 695, Fire Pump, Section 695.7, Voltage Drop.

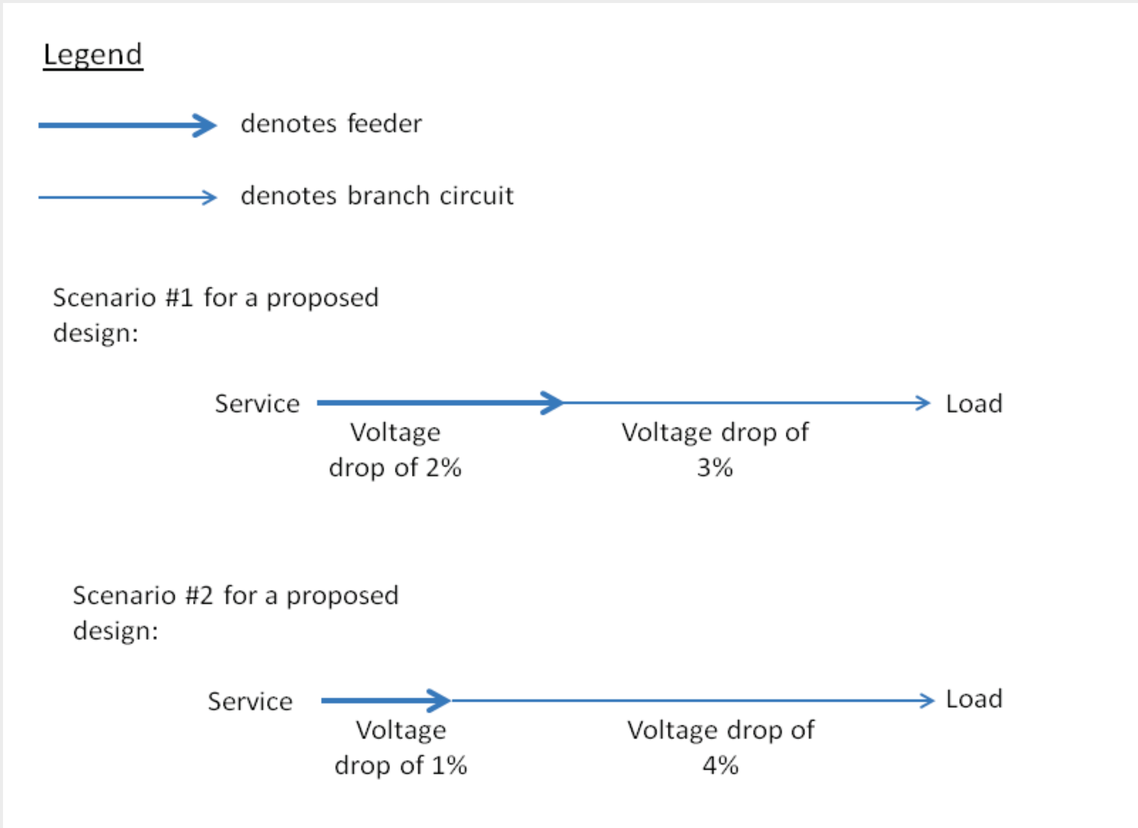
However, the informational note about voltage drop in Article 210, Branch Circuits, of the CEC is not part of the requirements of California Electrical Code, nor is the informational note about voltage drop in Article 215, Feeders.

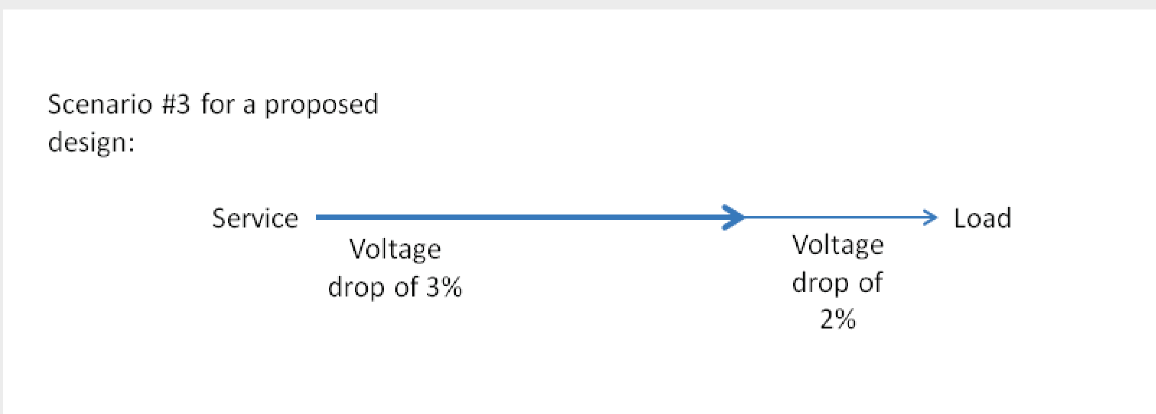
Voltage drop represents energy lost as heat in the electrical conductors. The loss is called "I^2R" (I-squared-R) loss, meaning that the loss is directly proportional to both the conductor resistance and to the current squared. Because of I^2R loss, it is advantageous to distribute utilization power at the highest practical voltage to reduce the amount of current into each load.

Voltage drop losses are cumulative, so voltage drop in feeders and voltage drop in branch circuits add up to the load at the end of the branch circuit. Excessive voltage drop in the feeder conductors and branch circuit conductors can result in inefficient operation of electrical equipment.

Example 8-9

Do the following proposed designs meet the voltage drop requirement of §130.5(c)?





Answer:

All of the above proposed design scenarios meet the voltage drop requirement of §130.5(c), as the combined voltage drop of the feeder and the branch circuit does not exceed 5 percent.

8.5 Circuit Controls and Controlled Receptacles for 120-Volt Receptacles

§130.5(d)

Office plug loads are the loads with the largest power density (W/ft^2) in most office buildings. The Energy Standards require both controlled and uncontrolled 120-volt receptacles in lobbies, conference rooms, kitchen areas in office spaces, copy rooms, and hotel/motel guest rooms. The requirement of the Energy Standards for controlled receptacles allows these plug loads to be turned off when the space is unoccupied, resulting in energy savings.

In the 2016 update to the Energy Standards the requirements for circuit and receptacle level controls for 120-Volt receptacles have been clarified. Either approach can be used, provided that controlled receptacles are marked to differentiate them from uncontrolled receptacles.

Methods for meeting requirements include:

1. For any uncontrolled outlets, ensure that at least one controlled outlet is located within 6 feet of the uncontrolled outlet.
2. Using split wired receptacles that provide at least one controlled outlet.

The requirement does not mean that one controlled outlet must exist for each uncontrolled outlet.

In open office areas where receptacles are installed in modular furniture, at least one controlled receptacle must be provided for each workstation. Alternatively, any controlled circuits already built into the building system can be used to meet the requirement.

The controlled receptacles must be automatically switched off when the space is not occupied. An automatic time switch with manual override may also be used for meeting the requirement.

Plug-in strips and other plug-in devices CANNOT be used to meet this requirement. A hardwired power strip controlled by an occupant sensing control may be used for meeting the requirement, but a plug-in power strip cannot be used: the intent is for the controlled receptacles to be permanently available, not removable.

There are important exceptions where an uncontrolled outlet is not required to be matched with a controlled outlet. They include:

1. Receptacles in kitchen areas that are specifically for refrigerators and water dispensers.
2. Receptacles specifically for clocks (note that the receptacle must be mounted 6' or more above the floor to meet this exception).
3. Receptacles in copy rooms specifically for <u>network</u> copiers, fax machines, A/V and data equipment other than personal computers.
4. Receptacles on circuits rated more than 20 amperes.
5. 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 the receptacles from other uncontrolled receptacles or circuits.

8.5.1 Application Considerations

The following are example approaches:

A. Private Offices, Conference Rooms, and other Spaces with Periodic Occupancy

Occupancy sensing controls that are part of a lighting control system may be used to control both general lighting and receptacles. For example, a common occupancy sensor can control general lighting and receptacles, with auxiliary relays connected to the lights and the controlled receptacles to provide the needed functionality.

B. Lobbies, Break Rooms, and other Spaces with Frequent Occupancy During Business Hours

Astronomic time-switch controls, with either a vacancy sensor or switch override, can switch the controlled receptacles. Programmable relay panels or controllable breakers can be used, or, for simpler projects, a combination of vacancy sensors and programmable time switches can accomplish the same task. Note that if vacancy sensing is used, controls will likely need to be room-by-room or space-by-space, but if time-of-day with manual override is used, whole circuits may be controlled together.

C. Open Office Areas

Receptacles in open office areas can be controlled by the building's automatic shut-off system or by controls integrated into the modular furniture systems. If the building provides controls, relays or controllable breakers with manual override switches for zones within an open office space may be used. A system using vacancy sensors might also be considered if sensors can be added as needed to address partitioning of the workstations (thus ensuring proper operation). Systems contained within workstation systems are an acceptable alternative provided that they are hardwired as part of the workstation wiring system.

D. Networked Control Systems and Building Automation Systems

Most advanced lighting and energy control systems can be easily designed to accommodate receptacle controls.

The Energy Standards recognize that certain office appliances, such as computers, need to be powered continuously during office hours to provide uninterrupted services. These would be connected to the uncontrolled receptacles. Other appliances, such as task lamps, personal fans and heaters, and monitors, do not need to be powered without the presence of occupants. These controllable loads would be plugged into the controlled receptacles to ensure they are automatically shut off and to prevent any unnecessary standby power draw. Ultimately, providing controlled receptacles allows building occupants to determine which appliances to be controlled.

In open office areas, it is advisable to implement vacancy sensor control at each workstation or cubicle to maximize the opportunities of shutoff controls. Modular office system furniture is usually equipped with more than one internal electrical circuit, and some of these circuits can be dedicated for controllable plug loads.

8.5.2 Demand Response

§130.5(e)

The demand response (DR) requirements of §130.5(e) specify that any controls or equipment for DR shall be capable of receiving and automatically responding to at least one standards-based messaging protocol. This ensures that any DR equipment that is installed is able to receive and respond appropriately to demand response signals.

To explain, the Energy Standards provide definitions for both “Demand Response Control” and “Demand Response Signal”:

- Demand Responsive Control is defined in §100.1 of the Energy Standards as “a kind of control that is capable of receiving and automatically responding to a demand response signal”.
- Demand Response Signal is defined in §100.1 as “a signal sent by the local utility, Independent System Operator (ISO), or designated curtailment service provider or aggregator, to a customer, indicating a price or a request to modify electricity consumption, for a limited time period.”

Demand response controls can be effectively employed in many circumstances and for several different building systems. The Energy Standards require demand response controls for lighting systems in two circumstances, per the requirements of the following sections:

- §130.1(e) requires the lighting in buildings over 10,000 square feet, excluding spaces with a lighting power density of 0.5 W/ft^2 or less, to be capable of automatically reducing lighting power in response to a Demand Responsive Signal; so that the total lighting power of non-excluded spaces can be lowered by a minimum of 15 percent below the total installed lighting power when a Demand Response Signal is received.
- §130.3(a)3 requires electronic message centers over 15 kW to have a control installed that is capable of reducing the lighting power by a minimum of 30 percent when receiving a Demand Response Signal.

The above requirements do NOT mean that a building has to respond to real time price signals; the requirement is to ensure that the building is DR ready (i.e., *capable* of responding to a DR signal). The decision to employ demand response is up to the building owner or manager, the utility company, and/or a governing authority. A building that is capable of responding to a request to reduce load when grid reliability is threatened (for instance with black outs) is sufficient to meet the requirements of the Energy Standards.

Demand response is becoming increasingly important as it permits the temporary reduction of electric load on the grid when extreme weather or supply constraints cause electricity demand to come close to the grid’s maximum supply capabilities. It is also seen as a means to allow building operators to control electricity costs, as future prices are expected to change constantly as a function of overall system demand.

Because mandatory demand response (“DR”) is relatively new, standards and systems are still being developed and evolving. For this reason, §130.5(e) does not specify a particular protocol or system, but rather lets it be specified by the utility company or other authority.

8.6 Additions and Alterations

Additions are like newly constructed buildings and all requirements of §130.5 apply to additions. For additions, the discussions in the previous sections of this chapter apply.

For alterations, the 2016 update of the Energy Standards included several edits to clarify the requirements that apply to alterations of electrical power distribution systems. A summary of these clarifications follows:

1. **Service Electrical Metering -** New or replacement electrical service equipment shall meet the requirements of §130.5(a). Alterations that do not install new service equipment or replace existing service equipment are not held to these requirements.

   Note that this requirement applies only to the service and does not apply to new or replaced feeders.

2. **Separation of Electrical Circuits for Electrical Energy Monitoring -** For entirely new or complete replacement of electrical power distribution systems, the entire system shall meet the applicable requirements of §130.5(b). Alterations that do not install an entirely new power distribution system, or completely replace an existing power distribution system, are not held to these requirements.

3. **Voltage Drop -** Alterations of feeders and branch circuits that include any addition, modification, or replacement of both feeders and branch circuits must meet the requirements of §130.5(c). Alterations that do not include both the feeder and branch circuit are not held to these requirements. For example, if a branch circuit is replaced but the feeder to the panel board is not touched, the feeder and branch circuit would not need to meet the 5 percent maximum voltage drop requirement.

   Note that the same exceptions for voltage drop permitted by the California Electric Code apply for alterations.

4. **Circuit Controls for 120 - Volt Receptacles and Controlled Receptacles -** For entirely new or complete replacement of electrical power distribution systems, the entire system shall meet the applicable requirements of §130.5(d).

Example 8-10

Question:

I have an existing building with multiple tenant spaces and each individual tenant space is served by separate and individual feeders. I am breaking up one large tenant space into two smaller ones. I plan to reuse the existing feeder and also to add a new feeder. Is it mandatory to provide a meter for the new feeder?

Answer:

No, this requirement is limited to new or replacement electrical service equipment, and does not apply to feeders. For alterations involving only new or replacement feeders, there is no requirement to install a meter for the newly added or replaced feeder.

Example 8-11

Question:

Does the language “entirely new or complete replacement” in §141.0(b)2Pii and iv refer to the entire building or just the altered areas of the building?

Answer:

This language applies to the electrical power distribution system within the building and therefore effectively refers to the entire building. A modification of only part of the electrical power distribution system does not trigger the requirement. For example, the scope of work for a tenant improvement project or for finishing an undeveloped space does not typically involve installing or replacing the entirety of the electrical power distribution system, and therefore separation of electrical circuits would not typically be required.

8.7 Equipment Requirements - Electrical Power Distribution Systems

The Energy Standards specify in §110.11 that low-voltage dry-type distribution transformers may be installed only if the manufacturer has certified model information to the Commission as required by the Title 20 Appliance Efficiency Regulations. In addition, §110.1 specifies that appliances regulated by the Title 20 Appliance Efficiency Regulations may be installed only if the appliance fully complies with those regulations, and both medium-voltage dry-type and liquid immersed transformers are included in the Appliance Efficiency Regulations.

Products that are successfully certified as complying with Title 20 are listed in the Appliance Efficiency Database along with their efficiency.

This means that builders, building design team engineers, or owners who wish to install a distribution transformer will generally need to check the Appliance Efficiency Database to confirm that the model they are selecting has been certified by its manufacturer as required by law. A link to the Database is below:

https://cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx

The following types of transformers are exempt from certification requirements, and are not required to be listed in the Database:

1. autotransformers;
2. drive (isolation) transformers;
3. grounding transformers;
4. machine-tool (control) transformers;
5. nonventilated transformers;
6. rectifier transformers;
7. regulating transformers;
8. sealed transformers;
9. special-impedance transformers;
10. testing transformers;
11. transformers with tap range of 20 percent or more;
12. uninterruptible power supply transformers; and
13. welding transformers.

8.8 Electrical Power Distribution Systems Compliance Documents

8.8.1 Overview

This section describes the compliance documentation (compliance form(s)) recommended for compliance with the requirements of the 2016 Energy Standards in regards to electrical power distribution systems.

At the time a building permit application is submitted to the enforcement agency, the applicant also submits plans and energy compliance documentation.

This section is addressed to the person preparing construction and compliance documents, and to the enforcement agency plan checkers who are examining those documents for compliance with the Energy Standards.

8.8.2 Compliance Documentation and Numbering

List of compliance documents for electrical power distribution systems:

- NRCC-ELC-01-E, Certificate of Compliance, Electrical Power Distribution Systems.
- NRCI-ELC-01-E, Certificate of Installation, Electrical Power Distribution Systems.

There are no acceptance test forms for electrical power distribution systems because there are no required acceptance tests for electrical power distribution systems under the Energy Standards.

The following is the numbering scheme of the compliance documentation forms:

NRCC	Nonresidential Certificate of Compliance
NRCI	Nonresidential Certificate of Installation
ELC	Electrical power distribution systems
E	Primarily used by enforcement authority
A	Primarily used by acceptance tester

Use a single compliance form for each building for the permit application; this is to ensure clarity of information for the permit and plan check process.

The paper prescriptive compliance documents have a limited number of rows per section for entering data. If additional spaces are required on the form in order to include the required information about the project, multiple copies of that page(s) may be used.