

6.2.5 Multi-Level Switching

§132(c)2

For building façades, parking lots, sales and non-sales canopies, outdoor sales areas and student pick-up/drop-off zones, where two or more luminaires are used, automatic time switch controls are required to provide the owner with the ability to turn off the lighting when it is not needed, and to reduce the lighting power by at least 50 percent but not exceeding 80 percent when the lighting is not needed. This switching scenario is sometimes referred to as multi-level switching. Continuous dimming control strategies also satisfy this requirement as long as their dimming range encompasses the 50 to 80 percent power reduction range. The control must be certified to the Energy Commission in accordance with the applicable requirements of §119. The following applications are not required to use multi-level switching:

1. Lighting required by a health or life safety statute, ordinance, or regulation, including but not limited to, emergency lighting.
2. Lighting for steps or stairs that require illumination during daylight hours.
3. Lighting that is controlled by both a motion sensor and photocontrol.
4. Lighting for facilities that have equal lighting requirements at all hours and are designed to operate continuously. This may include a business that has substantial and continuous on-site traffic 24 hours a day. A grocery store that is open 24 hours a day typically does not need 100 percent of the parking lot lighting on all night long. The parking lot for a business that closes at night would not have equal lighting requirements at all hours.
5. Temporary outdoor lighting as defined by §101.
6. Signs. See Chapter 7 for a discussion of the requirements for sign lighting controls (§133).

There are a number of options available to meet the requirements of this section. Automatic controls to reduce outdoor lighting by at least 50 percent but not exceeding 80 percent are required with all of these strategies. Following are a few examples:

1. Dimmable lighting systems can be used to meet the outdoor multi-level switching requirements. For HID fixtures, the high-low strategy (i.e.: Having options of 100 percent or 60 percent of full rated lighting power) or continuous dimming capable of reducing the connected lighting power by 50 percent to 80 percent may be used. For HID and LED fixtures, stepped dimming is acceptable provided that steps are available that are within the 50 percent to 80 percent range. LED continuous dimming strategies are acceptable as long as their dimming capacity encompasses the 50 percent to 80 percent range.
2. When there are two or more fixtures on a single pole, the fixtures can be switched separately.
3. Every other fixture or pole can be switched separately. This is also known as checkerboard switching.
4. Every other row of fixtures or poles can be switched separately.

5. The front half of a parking lot can be switched separately from the back half or sides of the parking lot.
6. Equip the lighting systems with motion sensors and photoelectric switches. This option works well with fluorescent and LED sources. HID sources may employ the high-low strategy with motion sensors.

Example 6-12**Question**

Will a circuit breaker meet the multi-level switching requirements?

Answer

No, circuit breakers are not considered automatic switching. The Standards define automatic as being capable of operating without human intervention.

Example 6-13**Question**

The Standards specify that the automatic multi-level switch must be able to reduce the outdoor lighting power by at least 50 percent, but not exceeding 80 percent, for certain lighting applications. Can any point between 50 percent and 80 percent be chosen to satisfy this requirement?

Answer

Yes, any point between 50 percent and 80 percent will satisfy this requirement. This may be a single point or multiple points, as long as they are within this range. Continuous dimming systems also satisfy this requirement as long as their dimming capacity falls in the 50 percent to 80 percent range.
