

## Title 24 Frequently Asked Questions Commercial Buildings

Lutron is not liable for reliance on this document towards interpreting or complying with your energy code requirements. This document summarizes the mandatory lighting controls requirements for commercial buildings according to California's *2005 Building Energy Efficiency Standards for Residential and Nonresidential Buildings*. It is for information purposes only. It is not meant to replace the California Energy Commission's (CEC) Title 24 Standards/Regulations. Please refer to those standards for precise interpretation. The complete standards and compliance manuals are available on the CEC website at: <http://www.energy.ca.gov/title24/>.

### What is Title 24?

- Title 24 is California's energy efficiency code
- Recently revised to decrease energy consumption
- Effective October 1, 2005
- Effects all newly constructed or altered commercial buildings

### What are the mandatory requirements for lighting systems and equipment in commercial buildings?

#### 1. Automatic shut-off:

- For every floor, all indoor lighting systems shall be equipped with a separate automatic control to shut off the lighting. This automatic control may be an occupant sensor, automatic time switch, or other device capable of automatically shutting of the lighting. The California Energy Commission (CEC) must certify the automatic control. To see a complete list of CEC approved Lutron lighting products see: <http://lutron.com/clc/energycodes/LUTRON 2005 CEC Listing 20050928.pdf>

Note that if an automatic time switch is used it must:

- Have holiday feature which turns off the lights for at least 24 hours during the holiday.
- Have a readily accessible manual override switch, which is located where the person using the override can see the lights.
- Have an override limit of not more than 2 hours with some exceptions.
- Control an area less than 5,000 sq. ft. or less than 20,000 sq. ft. for malls, auditoriums, single-tenant retail spaces, industrial facilities, convention centers, and arenas.

## Title 24 Frequently Asked Questions Commercial Buildings

### Exceptions:

- Areas continuously lit, 24 hours per day/365 days per year.
- Lighting in corridors, guest-rooms, and lodging quarters of high-rise residential buildings and hotels/motels.
- Up to .5 Watts/sq. ft. of lighting for any area that must be lit for security for emergency egress.

### 2. Daylighting:

- Daylit areas in enclosed spaces greater than 250 sq. ft. must have a light control that:
  - Controls at least 50% of the power in the daylit areas separately from other lighting in the space; and
  - Controls luminaires in vertically daylit areas separately from horizontally daylit areas.
  - Maintains a reasonable uniform level of illuminance in the space.
- Daylit areas in enclosed spaces under skylights that are larger than 2,500 sq. ft. must use a CEC approved multi-level daylighting control or a CEC approved astronomical time switch with override capability.

### Exceptions:

- Daylit areas where the effective aperture is less than 0.1 for vertical glazing and less than 0.006 for skylights.
- Areas where obstructions make daylighting infeasible.

### 3. Exterior Lighting:

- All permanently installed lighting shall be controlled by a photocontrol or astronomical time switch that automatically turns off the outdoor lighting when daylight is available. Exceptions for parking garages, tunnels, and large covered areas that require illumination during daylight hours.
- For building facades, parking lots, garages, canopies, and all outdoor sales areas, where 2 or more luminaires are used, an automatic time switch shall:
  - Turn off the lights when not needed; and
  - Reduce the lighting power by at least 50% but not exceeding 80% or provide continuous dimming through a range that includes 50% through 80% reduction.

## Title 24 Frequently Asked Questions Commercial Buildings

### Exceptions:

- Emergency lighting
- Lighting for steps or stairs
- Lighting controlled by a motion sensor and photocontrol
- Lighting for facilities that have equal lighting requirements at all hours and are designed to operate continuously
- Temporary outdoor lighting
- Internally illuminated, externally illuminated, and unfiltered signs

### 4. Area Control:

- Each area enclosed by ceiling-height partitions must have an independent switching or control device (occupancy sensor or manual switch) that:
  - is readily accessible; and
  - is located so that a person using the device can see the lights or area controlled by the switch, or so that the area being lit is annunciated; and
  - is able to override other devices

### Exceptions:

- Up to 0.5 watts/sq. ft. of lighting for security or egress
- Areas where only authorized personnel are allowed to use the switches

### 5. Multi-level Lighting Controls:

- Any enclosed space 100 sq. ft. or larger that has a connected lighting load greater than 0.8 watts/sq. ft., and that has more than one luminaire shall use a multi-level lighting control (control that reduces lighting power by either continuous dimming, stepped dimming, or stepped switching while maintaining a reasonably uniform level of illuminance throughout the controlled space. The multi-level lighting controls must have one control step that is between 50% and 70% of design lighting power and at least one step of minimum output operating at less than 35% of full rated lighting system power (this could be completely off).

### Exceptions:

- Corridor lighting

## **Title 24 Frequently Asked Questions Commercial Buildings**

6. Display lighting:
  - Display lighting must be separately switched on circuits that are 20 amps or less.
  
7. Lighting Control Acceptance:
  - All lighting controls serving the building shall be certified as meeting the Acceptable Requirements for Code Compliance. A Certificate of Acceptance shall be submitted to the building department that certifies that the lighting systems and controls comply with Title 24 requirements.

## Title 24 Frequently Asked Questions Commercial Buildings

### Which Lutron products can be used to satisfy Title 24's commercial code requirements?

The following table contains the Lutron commercial solutions for the primary Title 24 code requirements:

	Lutron Energy Code Solutions	Title 24 Commercial Code Requirements				
		Automatic Shut-off	Area Controls	Daylighting	Outdoor Light Control	Multi-Level Lighting Controls
<b>Entire-Room Controls</b>						
	<b>EcoSystem</b>	✓	✓	✓		✓
	<b>GRAFIK Eye 3000 Series</b>	✓	✓	✓	✓	✓
	<b>GRAFIK Eye 4000 Series</b>	✓	✓	✓	✓	✓
	<b>Lutron LOS Family Occ Sensors</b>	✓	✓			
	<b>Lutron Wallbox Dimmers</b>		✓			✓
	<b>RadioTouch</b>	✓	✓	✓		✓
	<b>Spacer System</b>		✓			✓
<b>Building Switching Systems</b>						
	<b>SoftSwitch128/512</b>	✓	✓	✓	✓	
<b>Total Building Controls</b>						
	<b>Digital microWATT</b>	✓	✓	✓	✓	✓
	<b>EcoSystem</b>	✓	✓	✓		✓
	<b>LCP 128</b>	✓	✓	✓	✓	✓
	<b>GRAFIK 5000/6000/7000</b>	✓	✓	✓	✓	✓
<b>Workplace Lighting Controls</b>						
	<b>EcoSystem</b>	✓	✓	✓		✓
	✓ means that the products comply with the code requirement when used appropriately					

## Title 24 Frequently Asked Questions Commercial Buildings

### For additional information:

Code requirements: Call the California Energy Commission (CEC):

- Inside California 1-800-772-3300
- Outside California 916-654-5106
- <http://www.energy.ca.gov/title24>

Additional Lutron Information:

- Lutron website [www.lutron.com/](http://www.lutron.com/)
- Lutron commercial Title 24 contact: Michael Jouaneh 610-282-5350