



# TITLE 24 COMPLIANCE

The California Lighting Technology Center's Nonresidential Lighting and Electrical Power Distribution Guide assists builders and lighting industry professionals in navigating the nonresidential lighting and electrical power distribution portions of California's Building Energy Efficiency Standards (Title 24, Part 6 or Energy Code). The 2022 iteration of the Energy Code takes effect on January 1, 2023.

Significant changes in the 2022 Energy Code address outdoor lighting zones, the nonresidential lighting power allowance tables, and demand response, as well as new requirements for occupancy sensing for office spaces. Major changes to the nonresidential lighting portion of the Energy Code include:

- A requirement for occupant-sensing controls in office spaces larger than 250 ft<sup>2</sup>
- New requirements for demand-responsive controls

Autani's innovative EnergyCenter energy management solution provides you with a comprehensive, budget-friendly means to meet Title 24 standards for lighting and HVAC control. Autani systems are already compliant with the lighting and HVAC control requirements in the 2022 revision of Title 24. In many cases, they surpass what is currently required.

## WHY CHOOSE AUTANI'S ENERGYCENTER SYSTEM?

- Updated Title 24 standards create new requirements for projects. Implementing Autani's system now enables you to comply with those requirements to avoid additional costs and delays.
- New utility incentives are being created for systems that can meet or exceed the updated Title 24 requirements. Implementing Autani's EnergyCenter system simplifies the utility rebate process.
- Utilities cannot incent code compliance, only solutions that exceed code. Implementing the Autani system now captures today's utility incentives and positions you to receive future incentives.

## Are you Title 24 Compliant?


To learn how Autani's innovative energy management products can help your facility become Title 24 compliant, email [sales@autani.com](mailto:sales@autani.com), call [443.320.2233](tel:443.320.2233), or visit our website [www.autani.com](http://www.autani.com).

## NONRESIDENTIAL LIGHTING CONTROLS

**Section 130.1 MANDATORY INDOOR LIGHTING CONTROLS** Nonresidential and hotel/motel buildings shall comply with the applicable requirements of Section 130.1 (a)-(f), in addition to the applicable requirements of Sections 110.9 and 130.0.



Indicates an update for 2022

<b>Section 130.1(a)</b> <b>Manual Area Controls</b>	<b>Be readily accessible; and located in the same enclosed area with the lighting it controls; and provide separate control of general, floor/wall/window/case display, ornamental, and special effects lighting.</b>		
<b>Exceptions</b>	Public restrooms having two or more stalls, parking areas, stairwells, and corridors may use a manual control not accessible to unauthorized personnel.	In malls, auditoriums, retail/showroom sales, comm/industrial storage areas, psychiatric and secure areas in healthcare facilities, and other areas where placement of a manual switch poses a health and safety hazard, the switch can be within sight of the lights being controlled or have a visual indicator.	In healthcare facilities, restrooms and bathing rooms intended for a single occupant, the lighting control may be located outside the enclosed area but directly adjacent to the door.
<b>Section 130.1(b)</b> <b>Multi-level Controls</b>	<b>Required if the general lighting of the enclosed area is 100 ft<sup>2</sup> or larger with a connected load &gt; 0.5 watts per ft<sup>2</sup>. The lighting would require multi-level controls that allow the level of lighting to be adjusted up or down. The multi-level control steps shall meet the uniformity requirements specified in TABLE 130.1-A.</b>		
<b>Exceptions</b>	Spaces with only one luminaire with no more than two lamps.	Classrooms < 0.7 Wft <sup>2</sup> with a control step between 30-70% power.	<ul style="list-style-type: none"> <li>• Healthcare facilities</li> <li>• Restrooms</li> </ul>
<b>Section 130.1(c)</b> <b>Shut-OFF Controls</b>	<b>All installed indoor lighting shall be controlled with occupant sensors, automatic time-switch control or other control capable of automatically shutting OFF all the lighting when unoccupied. Separate controls for general, display, ornamental, and each floor (other than stairwells) not exceeding 5,000 ft<sup>2</sup> and 20,000 ft<sup>2</sup> in malls, auditoriums, single tenant retails, and industrial.</b>		
<b>Exceptions</b>	<ul style="list-style-type: none"> <li>• Continuous use 24/365</li> <li>• Egress lighting, &lt;= 0.1 Wft<sup>2</sup></li> <li>• Electrical equipment rooms</li> <li>• Healthcare facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Under-shelf or furniture-mounted task lighting controlled by a local switch and either a time switch or an occupancy sensor</li> </ul>	<ul style="list-style-type: none"> <li>• Emergency lighting which only operates when normal power is absent</li> </ul>
 <b>2022 Update: Offices &gt;250 ft<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• Lighting shall be controlled separately in control zones not greater than 600 ft<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Reduce lighting by at least 80% within 20 minutes after a zone is unoccupied</li> </ul>	<ul style="list-style-type: none"> <li>• When occupancy is detected in any control zone in the space, the lighting in other control zones that are unoccupied shall operate at no more than 20 percent of full power</li> </ul>
<b>Occupancy Sensors-Required</b>	<ul style="list-style-type: none"> <li>• Offices &lt; 250 ft<sup>2</sup></li> <li>• Multipurpose rooms &gt; 1000 ft<sup>2</sup></li> <li>• Restrooms</li> </ul>	<ul style="list-style-type: none"> <li>• Classrooms</li> <li>• Conference Rooms</li> <li>• 20 minute max timeout</li> </ul>	<ul style="list-style-type: none"> <li>• If multi-level control is required, must be partial on (50-70%) or manual on (Vacancy)</li> </ul>
<b>Occupancy Sensors-Full ON to Partial OFF &gt;50% and Auto OFF</b>	<ul style="list-style-type: none"> <li>• Stairwells</li> <li>• Aisleways/open areas in warehouses</li> </ul>	<ul style="list-style-type: none"> <li>• 20 minute max timeout</li> </ul>	<ul style="list-style-type: none"> <li>• Library book stack aisles</li> <li>• Single entry &gt; 10 ft</li> <li>• Multiple entry &gt; 20 ft</li> </ul>
<b>Occupancy Sensors-Full ON to Partial OFF 20-50%</b>	<ul style="list-style-type: none"> <li>• Parking garages</li> </ul>	<ul style="list-style-type: none"> <li>• Residential high-rise stairwells and common area guest room corridors</li> </ul>	
<b>Automatic Time Switch</b>	<ul style="list-style-type: none"> <li>• May include manual on mode</li> <li>• Automatic holiday "shut-off"</li> </ul>	<ul style="list-style-type: none"> <li>• Required to have manual override</li> <li>• Maximum 2-hour after-hours override</li> </ul>	<ul style="list-style-type: none"> <li>• Malls, auditoriums, single tenant retail, industrial and captive key card areas may exceed 2-hour override requirement</li> </ul>
<b>Countdown Timer Switch</b>	<ul style="list-style-type: none"> <li>• 30 minutes off maximum</li> </ul>	<ul style="list-style-type: none"> <li>• Closets &lt; 70 ft<sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Server aisles in server rooms</li> </ul>

<b>Section 130.1(d) Daylighting</b>	<b>Automatically adjust the power of the installed lighting up and down as incoming daylighting changes. Daylighting controls shall provide separate control for luminaires in each type of daylight zone. Lighting in skylit zone and sidelit zone is considered skylit zone.</b>		
<b>Exceptions</b>	<ul style="list-style-type: none"> <li>Glazing in room is &lt; 24 ft<sup>2</sup></li> <li>Primary/skylight lighting &lt; 120 W</li> <li>Glazing with overhang above may be exempt</li> <li>Sidelight zones in retail merchandise/wholesale showrooms</li> </ul>		
<b>2022 Update</b>	<ul style="list-style-type: none"> <li>Automatic daylighting controls for secondary sidelit daylight zones are now mandatory, §130.1(d)</li> </ul>		
<b>Daylighting Requirements</b>	<ul style="list-style-type: none"> <li>Continuous dimming or Multi-level per 130.1(b)</li> <li>Combined illuminance not less than designed illuminance</li> <li>Indoor spaces, daylighting is &gt; 150% of designed output, lighting shall be reduced by minimum of 65%</li> <li>Parking structures, when daylighting is &gt; 150% of designed output at the farthest end of the daylighting zone, lighting shall be zero</li> </ul>		
<b>Section 130.5(d) Plug Load Control</b>	<b>Plug load control required in office spaces/kitchens, lobbies, conference rooms, copy rooms and motel/hotel guest rooms within 30 minutes of vacancy. Plug loads can be all split wire controlled or complete receptacles within 6 ft of each uncontrolled receptacle.</b>		
<b>Exceptions</b>	<ul style="list-style-type: none"> <li>Healthcare exempt</li> <li>Refrigerators/waster dispensers</li> <li>Located &gt; 6 ft above floor for clocks</li> <li>Network copiers, fax, A/V and data equipment other than PC</li> <li>Remodels required if complete replacement of electrical distribution system</li> </ul>		
<b>Section 110.12 Demand Response</b>	<b>Nonresidential buildings &gt; 10,000 ft<sup>2</sup> shall be capable of automatically reducing lighting power, per Table 130.1-A, in response to a Demand Response Signal a minimum of 15% below total lighting power. Shall be Open ADR 2.0 a/b Virtual End Node (VEN) OR capable of responding to a certified Open ADR 2.0b VEN.</b>		
<b>Exceptions</b>	<ul style="list-style-type: none"> <li>Health or life safety statute or regulation</li> <li>Spaces &lt; 0.5 W are not controlled and do not count toward 10,000 ft<sup>2</sup></li> </ul>		
<b>2022 Update</b>	<ul style="list-style-type: none"> <li>Demand responsive lighting controls now required for buildings with total installed lighting power of 4,000 watts or greater rather than buildings larger than 10,000 SF. §110.12(c)</li> <li>Controlled receptacles now required to be demand responsive and verified through acceptance testing. §110.12(e) and §130.4(a)8</li> </ul>		
<b>Section 130.2 Outdoor Lighting Controls</b>	<b>Shall be independently controlled from other electrical loads. Part night controls must have sunrise/sunset prediction via photocell and time measurement and have the ability to reduce or turn off outdoor luminaires at night.</b>		
	<b>Daylighting controls</b>	<b>Motion sensing controls</b>	<b>Automatic scheduling controls</b>
	<ul style="list-style-type: none"> <li>Photocell</li> <li>Astronomical time-switch control</li> <li>Other control capable of automatically shutting off the lights during daylight</li> </ul>	<ul style="list-style-type: none"> <li>Reduce lighting by 50-90% and off</li> <li>Reduce lighting to dim/off &gt; 15 minutes after vacancy</li> <li>1500 W maximum per sensor</li> <li>Fixtures &lt; 24 ft above grade and wall packs</li> </ul>	<ul style="list-style-type: none"> <li>Reduce lighting by 50-90% and off</li> <li>Two nighttime periods</li> <li>May have override &lt; 2 hours</li> <li>May be in conjunction with motion sensors</li> </ul>
<b>Exceptions</b>	<ul style="list-style-type: none"> <li>Health or life safety statute or regulation – OFF may have a longer time out period or &gt; 50% lighting level</li> <li>&lt; 40 W not required to have motion controls</li> <li>Lighting in tunnels required for 24/365 operation</li> </ul>		
<b>Section 130.4 (a-c) Acceptance Testing</b>	<b>Nonresidential buildings other than healthcare facilities and hotel/motel buildings shall comply. Required testing to meet the requirements of Part 6 for Automatic Shutoff, Daylighting, Demand Response and Outdoor lighting controls prior to final occupancy permit. Healthcare facilities shall comply with the requirements of California's Office of Statewide Health Planning and Development (OSHPD).</b>		
<b>2022 Update</b>	<ul style="list-style-type: none"> <li>Controlled receptacles now required to be demand responsive and verified through acceptance testing, §130.4(a)8 and §110.12(e)</li> </ul>		

*This guide was developed based upon published Building Energy Efficiency Standards for Nonresidential Buildings (CEC-400-2018-020-CMF), and Nonresidential Compliance Manual for Building Energy Efficiency Standards (CEC-400-2018-018-CMF) (collectively, "the code"); it is not intended to replace the code, nor be a source of expertise that interpret the code. This training material is based on CEC T24 code as it exists at the time of publication and may be updated without notice. Autani, LLC accepts no liability for the content of this publication, or the consequences of any action taken on the basis of the information provided herein. California Energy Commission Building Energy Efficiency Standards documents can be found at: [www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards](http://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards).*