

**Scope:** Lighting controls for interior and exterior applications and electrical consumption. Alteration of ≥ 50% luminaire replacement or ≥ 10% of new lighting system luminaires.  
**Exceptions:** Commercial building dwelling units; continuously lit security and emergency areas; exit stairs, ramps, and passageways; emergency egress normally off

**Lighting Auto Off Control – Occupancy Sensor or Time Switch**

<b>SENSOR REQUIREMENTS</b>	<b>C405.2.1</b> <b>Occupancy Sensor Controls</b> <ul style="list-style-type: none"> <li>Lights auto off within 30 minutes [C405.2.1.1.1]</li> <li>Manual turn off [C405.2.1.1.3]</li> </ul>	<b>Required for the Following Space Types:</b> <ul style="list-style-type: none"> <li>Class/lecture/training</li> <li>Conference/meeting</li> <li>Copy/print rooms</li> <li>Lounges</li> <li>Lunch and break rooms</li> <li>Private offices</li> <li>Restrooms</li> <li>Storage rooms</li> <li>Janitorial closets</li> <li>Locker rooms</li> <li>Spaces ≤ 300ft<sup>2</sup></li> <li>Warehouses</li> </ul>	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Dwelling units, security and emergency areas; exit stairs, ramps and passageways; emergency egress</li> </ul>
	<b>C405.2.1.1.2</b> <b>Manual On or Partial Auto On</b> <ul style="list-style-type: none"> <li>Manual on or partial auto on ≤ 50% power</li> <li>Full auto on only permitted for select spaces</li> </ul>	<b>Lighting Full Auto On Only Permitted for:</b> <ul style="list-style-type: none"> <li>Public corridors</li> <li>Stairways</li> <li>Where manual on would endanger safety or security</li> <li>Primary entrances</li> <li>Lobbies</li> <li>Restrooms</li> </ul>	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Where full auto on is permitted, manual on or partial auto on is not required</li> </ul>
	<b>C405.2.1.2</b> <b>Warehouse Aisle and Open Area</b> <ul style="list-style-type: none"> <li>Automatically reduce lighting ≥ 50% when unoccupied</li> </ul>	Each aisle independently controlled, cannot control lighting beyond aisles	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Need not comply with auto off, manual or partial on, or manual off provisions of C405.2.1.1</li> </ul>

**If Occupancy Sensor Not Required or Used, Time Switch Control is Required as Follows**

<b>TIME SWITCH REQUIREMENT</b>	<b>C405.2.2</b> <b>Time Switch Controls</b> <ul style="list-style-type: none"> <li>Provide a manual override switch</li> <li>Override for ≤ 2 hours</li> <li>Control area ≤ 5,000ft<sup>2</sup></li> </ul>	<b>In Malls, Arcades, Auditoriums, Retail, Industrial Facilities, Arenas:</b> <ul style="list-style-type: none"> <li>Override &gt; 2 hours with captive key switch</li> <li>Control area ≤ 20,000ft<sup>2</sup></li> </ul>	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Where manual reduction provided:                             <ul style="list-style-type: none"> <li>Sleeping units</li> <li>Patient care</li> <li>Where auto off would endanger safety or security</li> <li>Continuous 24/7 operations</li> <li>Shop and laboratory classrooms</li> </ul> </li> </ul>
	<b>C405.2.2.2</b> <b>Manual Light Reduction Control</b> <ul style="list-style-type: none"> <li>Uniformly dim or switch off ≥ 50% of lighting</li> </ul>	Choose between switching or dimming light reduction controls Note: Warehouse light reduction is automatically controlled under occupancy sensor control, section C405.2.1.2	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Only one luminaire &lt; 100W</li> <li>Space lighting &lt; 0.6W/ft<sup>2</sup></li> <li>Daylight-responsive control zones</li> <li>The following space types:                             <ul style="list-style-type: none"> <li>Corridors</li> <li>Equipment rooms</li> <li>Public lobbies</li> <li>Elect/mech rooms</li> </ul> </li> </ul>
	<b>C405.2.2.3</b> <b>Manual Lighting Controls</b> <ul style="list-style-type: none"> <li>Readily accessible to occupants</li> <li>Controlled lighting is visible from manual control</li> </ul>	Choose between switching or dimming manual controls	<b>Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Remote control allowed if lighting served is identified and status indicated</li> </ul>
	<b>C405.2.3</b> <b>Daylight Responsive Control</b> <ul style="list-style-type: none"> <li>Automatically reduce lighting with daylight contribution</li> <li>Must continuously dim offices, classrooms, labs, library reading rooms to ≤ 15%</li> <li>Either continuous dimming or on/off control for all other space types</li> <li>Capable of complete lighting shut off</li> <li>Authorized calibration access within controlled space</li> </ul>	<div style="text-align: center;"> <p>Primary daylight area lighting &gt;150W?</p> <p><b>YES</b> ↓</p> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white; width: fit-content; margin: 0 auto;"> <b>Daylight Control Required</b>                      Choose continuous dimming (required for some spaces) or on/off control                 </div> <p><b>NO</b> ↓</p> <div style="border: 1px solid black; padding: 5px; background-color: #333; color: white; width: fit-content; margin: 0 auto;"> <b>Daylight Control Not Required</b> </div> </div>	<b>Daylight Primary Exceptions:</b> <ul style="list-style-type: none"> <li>Health and patient care spaces</li> <li>Dwelling and sleeping units</li> <li>Specific application lighting</li> <li>Where obstructions block daylight</li> <li>When sidelight transmittance &lt; 0.2</li> <li>When toplight transmittance times opening area divided by zone area ≥ 0.008</li> </ul>
<b>C405.2.4</b> <b>Specific Application Lighting</b> <ul style="list-style-type: none"> <li>Control independent from other lighting in the space</li> </ul>	<b>Required for the Following Lighting:</b> <ul style="list-style-type: none"> <li>Display and accent</li> <li>Display cases</li> <li>Food warming</li> <li>Lighting for sale</li> <li>Lighting for education</li> <li>Plant growth</li> <li>Supplemental task</li> <li>Under shelf/cabinet</li> </ul>	<b>Primary Exceptions:</b> <p>None</p>	

**Other Lighting Control Requirements**

**C405.2.4.3**  
**Hotel/Motel and Guest Suites**  
 Master control device turns off all installed luminaires and switched receptacles within 20 minutes of occupants leaving  
**Exceptions:**  
 Lighting and switched receptacles controlled by a captive key system

**C405.2.5**  
**Exterior Lighting Controls**

- All lights auto off when daylight available
- Facade, landscape lights also auto off as a function of business open/close time
- All other lighting also reduce power by ≥ 30% no later than midnight to 6AM, one hour after closing to one hour before opening, or when no activity is detected for > 15 minutes

**Exceptions:**

- Lighting for health and safety
- Covered vehicle entrances
- Building/parking structure exits for safety, security, or eye adaptation

**C406.1**  
**Additional Efficiency Package**  
 Comply with one of the following:

- More efficient HVAC performance
- Reduced lighting power density:**  
Reduce to 90% of Table C405.4.2
- Enhanced digital lighting controls:**  
Continuous dimming, individually addressable luminaires, daylight responsive, digital reconfigurable, load shedding, individual user control, digital occupancy sensor reconfigurable
- On-site renewable energy
- Dedicated outdoor air provision
- High-efficiency service water heating

**C408.3**  
**Lighting System Functional Testing**  
 Before final inspection, a *registered design professional* provides evidence that lighting controls have been tested, calibrated, adjusted, programmed, and are in working condition

- Test occupancy sensors [C408.3.1.1]
- Test auto time switch [C408.3.1.2]
- Test daylight responsive [C408.3.1.3]

**Documentation Requirements**  
 Provide owner documents certifying lighting controls meet performance criteria within 90 days after certificate of occupancy