What is Title 24?

Title 24, also known as the California Building Standards Code, sets energy standards for all new residential and commercial buildings, and regulates alterations to existing buildings.

Why is it important?

Title 24 is paving the way for energy conservation in the state of California. This means reduced energy costs and a greener future for all.

As technologies like LED make headway in residential and commercial lighting, Title 24 requirements become more stringent to reflect the increased energy efficiency of available products.

At Alcon, many of our products are geared toward Title 24 compliance. We can help you pass acceptance tests without knowing Title 24 line by line.
Key Changes as of January 1, 2017

Timeout for occupancy and vacancy sensors changed from 30 minutes to 20 minutes. Classrooms, conference rooms, offices <250 square feet and multipurpose rooms <1,000 square feet are now required to have either a Vacancy Sensor (automatic OFF, manual ON) or a Partial-ON Occupancy Sensor (automatic OFF, automatic ON to 50-70% of full power).

- Lower Lighting Power Density allowances for many area types.
- Two new Power Adjustment Factors for institutional tuning and daylight harvesting.
- Three PAF eliminated.
- Requirements for alterations are now less stringent.

Keywords

LPD — Lighting Power Density. The lighting allowance allotted by Title 24 expressed as watts per square foot.

Why it’s important: The 2016 edition of Title 24 reduced the LPD for many types of spaces and buildings, making the requirements even tougher than the 2013 edition. Fortunately, LEDs are still the solution for meeting Title 24 standards.

Acceptance Test — An engineering term for “testing to see if the requirements of the code are met”.

Why it’s important: Acceptance testing is a requirement of Title 24.

Vacancy Sensor — Lights automatically turn OFF when the room is vacant for 20 minutes or longer, but only turn on manually.

Why it’s important: A vacancy sensor is the most energy-friendly of all sensor options, because lights will automatically shut off if the room is unoccupied, and will only turn back on again manually.

Occupancy Sensor, Partial-ON — Lights automatically turn OFF when the room is vacant for 20 minutes or longer. Lights automatically turn ON to 50-70% when someone enters the room.

Why it’s important: Partial-ON is the second most energy friendly of all the sensor options. Lights will switch ON automatically but not to 100%, with the expectation that most people won’t
bother to turn on more lights or adjust the lighting level.

**Occupancy Sensor, Partial-OFF** — Lights automatically dim to 50% or less of full power when the space is vacant for 20 minutes or longer. Lights automatically turn ON when someone enters. *Why it’s important:* Partial-OFF occupancy sensors are required for corridors, stairwells, and other spaces where full OFF is not feasible.

**Multi-Level Lighting Controls** — Lighting controls that reduce the power going to a lighting system in multiple steps—usually means a dimmer. *Why it’s important:* Multi-level Lighting Controls are required for any enclosed area 100 square feet or larger, with a connected lighting load that exceeds 0.5 watts per square foot.

**Daylighting Controls** — Controls that use one or more photosensors to detect changes in daylight illumination, adjusting the lighting level in response. *Why it’s important:* Daylighting controls are required in daylit zones, as defined by Title 24. Primary daylit zones must be controlled separately from secondary daylit zones.

**Local Switch** — Manual switch that is easily accessible. *Why it’s important:* Most spaces require a local switch, although there are exceptions for public restrooms, stairwells, and corridors.

**Automatic Time-Switch Control** — Programmable time clock that turns off lighting when a space is typically unoccupied. *Why it’s important:* Meets the requirement for an occupancy/vacancy sensor for some types of spaces.

**Area Category Method:** Values for LPD in this document are those allotted by the Area Category Method, one of three possible methods for meeting Title 24 requirements.
CLASSROOM, LECTURE HALL, TRAINING ROOM

REQUIREMENTS:

Local Switch
Vacancy Sensor

OR

Occupancy Sensor Partial-ON
Multi-level Lighting Controls
Daylight Controls

LPD: 1.2 WATTS/FT²

Note: Classrooms with a connected general lighting load of 0.7 watts per square foot or less shall have at least one control step between 30-70 percent of full rated power.

CONFERENCE ROOM, MEETING ROOM, MULTIPURPOSE ROOM

REQUIREMENTS:

Local Switch
Vacancy Sensor

OR

Occupancy Sensor Partial-ON
Multi-level Lighting Controls
Daylight Controls

LPD: 1.2 WATTS/FT²
OFFICE > 250 SQUARE FEET

**REQUIREMENTS:**

Local Switch  
Vacancy Sensor  

**OR**

Occupancy Sensor, Partial-ON  
Multi-level Lighting Controls  
Daylight Controls  

**LPD:** 1.0 WATTS/FT²

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OFFICE < 250 SQUARE FEET

**REQUIREMENTS:**

Local Switch  
Automatic Time-Switch Control  

**OR**

Vacancy Sensor  

**OR**

Occupancy Sensor Partial ON  
Multi-level Lighting Controls  
Daylight Controls  

**LPD:** 0.75 WATTS/FT²
**RESTROOM**

**REQUIREMENTS:**

Local Switch*
Automatic Time-Switch Control
Vacancy Sensor

OR

Occupancy Sensor Partial-ON
Multi-level Lighting Controls**
Daylight Controls

**LPD:** 0.60 WATTS/FT²

*Not required for public restrooms with 2 or more stalls.
**Public restrooms shall have at least one control step between 30-70 percent of full rated power.

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**CORRIDOR**

**REQUIREMENTS:**

Programmable Timeclock

OR

Occupancy Sensor, Partial-OFF
Multi-level Lighting Controls
Daylight Controls

**LPD:** 0.60 WATTS/FT²
STAIRWELL

REQUIREMENTS:

Programmable Timeclock

OR

Occupancy Sensor Partial-OFF
Multi-level Lighting Controls
Daylight Controls

LPD: 0.6 WATTS/FT²

STORAGE ROOM > 100 SQUARE FEET

REQUIREMENTS:

Local Switch
Programmable Timeclock

OR

Vacancy Sensor

OR

Occupancy Sensor, Partial-ON
Multi-level Lighting Controls
Daylight Controls

LPD: 0.60 WATTS/FT²
### Table 140.6-C Area Category Method - Lighting Power Density Values (Watts/ft²)

<table>
<thead>
<tr>
<th>PRIMARY FUNCTION AREA</th>
<th>ALLOWED LIGHTING POWER DENSITY (W/ft²)</th>
<th>PRIMARY FUNCTION AREA</th>
<th>ALLOWED LIGHTING POWER DENSITY (W/ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auditorium Area</td>
<td>1.40³</td>
<td>Library Area</td>
<td>1.1³</td>
</tr>
<tr>
<td>Auto Repair Area</td>
<td>0.90²</td>
<td>Reading areas</td>
<td>1.1³</td>
</tr>
<tr>
<td>Beauty Salon Area</td>
<td>1.7</td>
<td>Stack areas</td>
<td>1.5³</td>
</tr>
<tr>
<td>Civic Meeting Place Area</td>
<td>1.3³</td>
<td>Hotel lobby</td>
<td>0.95³</td>
</tr>
<tr>
<td>Classroom, Lecture, Training, Vocational Areas</td>
<td>1.2⁵</td>
<td>Main entry lobby</td>
<td>0.95³</td>
</tr>
<tr>
<td>Commercial and Industrial Storage Areas (conditioned and unconditioned)</td>
<td>0.60</td>
<td>Locker/Dressing Room</td>
<td>0.70</td>
</tr>
<tr>
<td>Commercial and Industrial Storage Areas (refrigerated)</td>
<td>0.7</td>
<td>Lounge Area</td>
<td>0.90³</td>
</tr>
<tr>
<td>Convention, Conference, Multipurpose and Meeting Center Areas</td>
<td>1.2³</td>
<td>Malls and Atria</td>
<td>0.95³</td>
</tr>
<tr>
<td>Corridor, Restroom, Stair, and Support Areas</td>
<td>0.60</td>
<td>Medical and Clinical Care Area</td>
<td>1.2</td>
</tr>
<tr>
<td>Dining Area</td>
<td>1.0³</td>
<td>Office Area &gt; 250 square feet</td>
<td>0.75</td>
</tr>
<tr>
<td>Electrical, Mechanical, Telephone Rooms</td>
<td>0.55²</td>
<td>Office Area ≤ 250 square feet</td>
<td>1.0</td>
</tr>
<tr>
<td>Exercise Center, Gymnasium Areas</td>
<td>1.0</td>
<td>Parking Garage Area</td>
<td>0.14</td>
</tr>
<tr>
<td>Exhibit, Museum Areas</td>
<td>1.8</td>
<td>Parking Area                                            ¹⁸</td>
<td></td>
</tr>
<tr>
<td>Financial Transaction Area</td>
<td>1.0³</td>
<td>Dedicated Ramps</td>
<td>0.30</td>
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<tr>
<td>Religious Worship Area</td>
<td>1.5³</td>
<td>Daylight Adaptation Zones</td>
<td>0.60</td>
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<tr>
<td>General Commercial and Industrial Work Areas</td>
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<td>Motion picture</td>
<td>0.90³</td>
</tr>
<tr>
<td>Low bay</td>
<td>0.9²</td>
<td>Performance</td>
<td>1.4³</td>
</tr>
<tr>
<td>High bay</td>
<td>1.0²</td>
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<td></td>
</tr>
<tr>
<td>Precision</td>
<td>1.2⁴</td>
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<td></td>
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<tr>
<td>Grocery Sales Area</td>
<td>1.2⁶⁷</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹⁸ Parking Area includes both indoor and outdoor areas.
²² High bay and Precision areas.
⁶ and ⁷ Retail Merchandise Sales, Wholesale Showroom Areas.
³³ Religious Worship Area includes both indoor and outdoor areas.
Disclaimer: The information herein is not intended to replace the professional advice of your architect, contractor, electrician, or lighting designer. Though we aim to provide the most accurate and up-to-date information, we cannot guarantee accuracy.