### C405.2 Mandatory Lighting Controls

C405.2 Mandatory Lighting Controls – shall comply with one of the following:

Lighting Controls Sections C405.2.1 through C405.2.5

#### Exceptions: Lighting controls are not required in areas:
- Designated as security or emergency areas that require continued lighting
- Interior exit stairways
- Interior exit ramps and passageways
- Emergency egress lighting that is normally off

#### Automatic off controls

<table>
<thead>
<tr>
<th>C405.2.1</th>
<th>Occupancy sensor controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Auto off within 30 min (C405.2.1.1.1)</td>
<td></td>
</tr>
<tr>
<td>• Manual turn off (C405.2.1.1.3)</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- Dwelling units
- Designated as security or emergency areas that require continued lighting
- Interior exit stairways
- Interior exit ramps and passageways
- Emergency egress lighting that is normally off

**Required in:**
- Classrooms
- Lecture
- Training rooms
- Conference
- Copy / Print rooms
- Meeting
- Multipurpose rooms
- Lounge
- Break rooms
- Private offices
- Restrooms
- Storage rooms
- Janitorial closets
- Locker rooms
- Enclosed spaces 300sq ft or less
- Warehouse

<table>
<thead>
<tr>
<th>C405.2.1.1.2</th>
<th>Manual ON or partial Auto ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manual ON or Auto ON to &lt; 50% power</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- Full auto ON is permitted within these spaces
- Public corridors, stairways, restrooms, primary building entrance, lobbies
- Where manual ON would endanger the safety or security of occupants

<table>
<thead>
<tr>
<th>C405.2.1.2</th>
<th>Occupant sensors in warehouses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Automatically reduce power by &gt; 50% when unoccupied</td>
<td></td>
</tr>
<tr>
<td>• Independent aisle controls</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- Daylight responsive control zones
- Corridors, lobbies, electrical rooms and mechanical rooms
- One luminaire with < 100W
- Spaces <0.6W per sqft

**Required in:**
- Areas where occupancy sensor is not used, time-switch must be used

### Manual controls

<table>
<thead>
<tr>
<th>C405.2.2.2</th>
<th>Manual Light-reduction controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Manually reduce lighting uniformly &gt;50%</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- Daylight responsive control zones
- Corridors, lobbies, electrical rooms and mechanical rooms
- One luminaire with < 100W
- Spaces <0.6W per sqft

**Required in:**
- Areas where occupancy sensor is not used, time-switch must be used

<table>
<thead>
<tr>
<th>C405.2.2.3</th>
<th>Manual controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Occupants have ready access</td>
<td></td>
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<tr>
<td>• Controlled lighting is visible</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- None

**Required in:**
- All spaces where required by this code

### Daylight responsive controls

<table>
<thead>
<tr>
<th>C405.2.3</th>
<th>Daylight-responsive controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sidelite zones controlled independently of toplit zones</td>
<td></td>
</tr>
<tr>
<td>• Continuously dim lighting in offices, classrooms, laboratories, library reading rooms</td>
<td></td>
</tr>
<tr>
<td>• Configured to completely shut off controlled lighting</td>
<td></td>
</tr>
<tr>
<td>• Zones facing different cardinal orientations shall be controlled independently</td>
<td></td>
</tr>
</tbody>
</table>

**Primary exceptions:**
- Spaces where patient care is directly provided
- Dwelling units and sleeping units
- Specific application lighting (C405.2.4)
- Sidelite zones on 1st floor above grade in Group A-2 and Group M occupancies
- LPW is less than LPA calculated in equation 4-9

**Required in:**
- Spaces with >150W of general lighting within sidelite zone (C405.2.3.2)
- Spaces with >150W of general lighting within toplit zone (C405.2.3.3)

### Specific application controls

<table>
<thead>
<tr>
<th>C405.2.4</th>
<th>Specific application controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Controlled separately from general lighting in the space</td>
<td></td>
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<tr>
<td>• Sleeping units automatic off of lighting and plug loads within 20 minutes of unoccupancy</td>
<td></td>
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</tbody>
</table>

**Primary exceptions:**
- Sleeping units with key card controls do not require automatic off
- Spaces where patient care is directly provided does not require automatic off

**Required in:**
- Display and accent
- Lighting in display cases
- Supplemental task lighting
- Under cabinet / shelf lighting
- Lighting equipment for sales
- Lighting education or demonstration
- Plant growth
- Food warming
Exterior lighting controls

C405.2.6
Exterior lighting controls
- Exterior lighting automatically turn off when daylight is present
- Façade or landscape lighting shall have automatic off controls based on dawn / dusk and a set open / close time
- All other lighting must be automatically reduced by >30% by:
  - No later than midnight to 6AM
  - 1hr after business close to 1hr before open
  - When unoccupied for 15 minutes
- Shall include exterior time-switch control functions

Primary exceptions:
- Lighting for covered vehicle entrances / exits and parking structures
- Where required for safety, security or eye adaption

Required in:
- Parking lot
- Area lighting
- Site lighting

Additional efficiency options

C406.1
Additional efficiency packages
Comply with one or more of the following:
- More efficient HVAC (C406.2)
- Reduce lighting power density (C406.3)
  - Reduce lighting to 90% of Table C405.2.(1)
- Enhanced Lighting Controls (C406.4)
- Onsite supply of renewable energy (C406.5)
- Dedicated outdoor air system (C406.6)
- High-efficiency water heating (C406.7)

C406.4
Enhanced digital lighting controls
- Luminaires shall be continuous dimming
- Luminaires shall be individually addressable
  - Not more than four luminaires in a group allowed
- Not more than eight luminaires in a daylight zone
- Reconfigurable by digital addressability
- Load shedding and individual user control in open offices
- Occupancy sensors shall be reconfigured digitally
- Construction documents include sequence of operations
- Functional testing (C408.3)

Functional testing

C408.3
Functional testing
A registered design professional must provide evidence that the lighting control system has been tested, calibrated, adjusted and is in proper working order with the construction documents.

Test requirements:
- Occupant sensor controls (C408.3.1.1)
- Time-switch controls (C408.3.1.2)
- Daylight responsive controls (C408.3.1.3)
- Documentation requirements (C408.3.2)

How Eaton control systems help meet IECC 2015:

<table>
<thead>
<tr>
<th>C405.2.1</th>
<th>C405.2.1.1.2</th>
<th>C405.2.1.2</th>
<th>C405.2.2</th>
<th>C405.2.2.2</th>
<th>C405.2.2.3</th>
<th>C405.2.3</th>
<th>C405.2.4</th>
<th>C405.2.6</th>
<th>C406.4</th>
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DLVP Room Controller WaveLinx iLumin Plus Fifth Light LumaWatt Pro