

**Scope:** Interior building spaces, exterior building features, exterior building grounds. Interior space lighting alterations where 50% or more of the connected lighting is altered.

**Exceptions:** Emergency lighting off during normal operation, lighting within dwelling units, lighting required by health or life safety, gas lighting

<p><b>9.4.1.1(a)</b> <b>Local Control Device</b> One or more manual control devices in a space:</p> <ul style="list-style-type: none"> <li>• Readily accessible</li> <li>• Can see lighting controlled from local device (May be an on/off switch or dimmer)</li> </ul>	<p>Space ≤ 10,000ft<sup>2</sup>?</p> <p><b>YES</b> Control area must be ≤ 2,500ft<sup>2</sup></p> <p><b>NO</b> Control area must be ≤ 10,000ft<sup>2</sup></p>	<p><b>Primary Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Remote control device permitted for safety or security, provided it has a status pilot light and is labeled to identify lights controlled</li> </ul>
<p><b>9.4.1.1(b) and 9.4.1.1(c)</b> <b>Manual or Partial Auto On</b></p> <ul style="list-style-type: none"> <li>• Lighting shall either be manual on or auto on to no more than 50% of the general lighting</li> </ul>	<p><b>Lighting Full Auto On Only Permitted for:</b></p> <ul style="list-style-type: none"> <li>- Corridors</li> <li>- Restrooms</li> <li>- Healthcare facility</li> <li>- Storage rooms &lt; 50ft<sup>2</sup></li> <li>- Where manual on would endanger safety or security</li> <li>- Stairwells</li> <li>- Lobbies</li> <li>- Elect/mech rooms</li> </ul>	<p><b>Primary Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Where full auto on is permitted, manual on or partial auto on is not required</li> </ul>
<p><b>9.4.1.1(d)</b> <b>Bi-level Control</b></p> <ul style="list-style-type: none"> <li>• Besides on and off, lighting is either continuously dimmed or controlled with at least one step between 30% and 70% of full lighting power</li> </ul>	<p>Choose between bi-level switching or continuous dimming control</p>	<p><b>Primary Exceptions:</b></p> <ul style="list-style-type: none"> <li>- Atriums &lt; 20ft ht</li> <li>- Corridors</li> <li>- Elect/mech rooms</li> <li>- Storerooms</li> <li>- Loading docks</li> <li>- Restrooms</li> <li>- Lobbies</li> </ul>
<p><b>9.4.1.1(e) and 9.4.1.1(f)</b> <b>Automatic Daylight Responsive Control</b></p> <ul style="list-style-type: none"> <li>• Either continuous dimming or at least one step between 50-70% and a second step between 20-40% or lowest dimmed level</li> <li>• Turns off all controlled lighting</li> </ul> <p><b>Sidelighting</b> – Two independent zones: primary and secondary <b>Toplighting</b> – Single primary zone under skylights and monitors</p>	<p>Primary daylight area lighting ≥ 150W or primary and secondary daylight area lighting ≥ 300W?</p> <p><b>YES</b> Daylight Control Required Choose dimming or step control</p> <p><b>NO</b> Daylight Control Not Required</p>	<p><b>Primary Exceptions Sidelight:</b></p> <ul style="list-style-type: none"> <li>• Adjacent structure obstruction</li> <li>• Glazing &lt; 20ft<sup>2</sup></li> <li>• Retail spaces</li> </ul> <p><b>Primary Exceptions Toplight:</b></p> <ul style="list-style-type: none"> <li>• Obstruction &gt; 1,500 hrs/year</li> <li>• Skylight visual transmittance &lt; 0.4</li> <li>• Climate zone 8 and lighting &lt; 200W</li> </ul>
<p><b>9.4.1.1(g)</b> <b>Automatic Partial Off</b></p> <ul style="list-style-type: none"> <li>• Automatically reduce general lighting ≤ 50% within 20 minutes of occupants leaving. Automatic Full Off complies. (Occupancy sensor control)</li> </ul>	<p><b>Required for the Following Space Types:</b></p> <ul style="list-style-type: none"> <li>- Corridors (not manufacturing)</li> <li>- Lobbies</li> <li>- Library stacks</li> <li>- Storage rooms &gt; 1,000ft<sup>2</sup></li> <li>- Classroom labs</li> <li>- Stairwells</li> <li>- Warehouses</li> </ul>	<p><b>Primary Exceptions:</b> All three conditions must be met:</p> <ol style="list-style-type: none"> <li>1. LPD no more than 0.8W/ft<sup>2</sup></li> <li>2. Spaces lit by HID lamps</li> <li>3. Light power reduced by ≥ 30% within 20 minutes after leaving</li> </ol>
<p><b>9.4.1.1(h)</b> <b>Automatic Full Off</b></p> <ul style="list-style-type: none"> <li>• All lighting must auto off within 20 minutes of occupants leaving. Control device shall control an area no larger than 5,000ft<sup>2</sup>. (Occupancy sensor control)</li> </ul>	<p><b>Required for the Following Space Types:</b></p> <ul style="list-style-type: none"> <li>- Classroom/training rooms</li> <li>- Lecture Hall</li> <li>- Conference/meeting rooms</li> <li>- Multipurpose rooms</li> <li>- Lounge/break rooms</li> <li>- Fitting/dressing rooms</li> <li>- Copy/print rooms</li> <li>- Storage rooms ≥ 50 to ≤ 1,000ft<sup>2</sup></li> <li>- Locker rooms</li> <li>- Restrooms</li> <li>- Offices ≤ 250ft<sup>2</sup></li> </ul>	<p><b>Primary Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Shop and classroom laboratories</li> <li>• Where auto off would endanger safety or security</li> <li>• Lighting for 24/7 operation</li> </ul>
<p><b>9.4.1.1(i)</b> <b>Scheduled Shut Off</b></p> <p>Lighting not already shut off by Automatic Full Off control must be shut off when scheduled unoccupied:</p> <ul style="list-style-type: none"> <li>• Time schedule or other control device signal</li> <li>• Control area ≤ 25,000ft<sup>2</sup> but not more than one floor</li> <li>• Override ≤ 2 hours and area ≤ 5,000ft<sup>2</sup></li> </ul>	<p>Required for spaces not already controlled by Automatic Full Off (9.4.1.1(h))</p>	<p><b>Primary Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Lighting for patient care</li> <li>• Where auto off would endanger safety or security</li> <li>• Lighting for 24/7 operation</li> </ul>
<p><b>9.4.1.3</b> <b>Special Application Lighting</b></p> <ul style="list-style-type: none"> <li>• Lighting that must be separately controlled from the space's general lighting</li> </ul>	<p><b>Required for the Following Lighting:</b></p> <ul style="list-style-type: none"> <li>- Display or 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</li> <li>- Under cabinet</li> </ul>	<p><b>Primary Exceptions:</b> None</p>
<p><b>8.4.2</b> <b>Automatic Receptacle Control</b></p> <p>The 2015 Michigan Energy Code does not require automatic receptacle control as mandated by the ASHRAE 90.1-2013 standard. Additional energy efficiency savings can be achieved through the use of automatic receptacle control in the recommended space types.</p>	<p><b>Recommended for the Following Space Types:</b></p> <ul style="list-style-type: none"> <li>- Private offices</li> <li>- Print/copy rooms</li> <li>- Individual workstations</li> <li>- Conference rooms</li> <li>- Break rooms</li> <li>- Classrooms</li> </ul>	<p><b>Recommended Exceptions:</b></p> <ul style="list-style-type: none"> <li>• Equipment operating 24/7</li> <li>• Where auto control would endanger safety or security</li> </ul>

### Other Lighting Control Requirements

#### 9.4.1.2

##### Parking Garage Lighting Control

- Automatic lighting shut off per 9.4.1.1(i)
- Automatically reduce lighting ≥ 30% when no activity detected within 20 minutes and with the area controlled being no larger than 3,600ft<sup>2</sup>
- Covered vehicle entrances and exits have separate controls to reduce lighting ≤ 50% from sunset to sunrise
- Within 20ft of perimeter wall openings, automatically reduce lighting power in response to daylight

#### 9.4.1.3(b)

##### Guestroom Control

Auto off all lighting and switched receptacles within 20 minutes of occupants leaving

##### Exceptions:

Lighting and switched receptacles controlled by a captive key system

##### Bathroom Control

Guestroom bathrooms have separate control to auto off bathroom lighting within 30 minutes of occupants leaving

##### Bathroom Exceptions:

Nightlights up to 5W per bathroom

#### 9.4.1.4

##### Exterior Lighting Controls

- Auto off when daylight is available
- Façade, landscape lighting auto off no later than midnight or business closing and 6AM or business opening
- Reduce all other lighting and signage ≥ 30% no later than midnight or within one hour after business operations end to 6AM or business opening, or when no activity detected for > 15 minutes

##### Exceptions:

- Covered vehicle entrances or for safety, security, or eye adaptation
- Lighting integral to signage

#### 9.4.3

##### Functional Testing

Lighting controls tested for proper calibration, adjustment, programming, and working condition

- Certify occupancy sensor parameters (see 9.4.3(a))
- Confirm and verify automatic time switch parameters (see 9.4.3(b))
- Verify daylight controls meet criteria (see 9.4.3(c))

Testing individual shall not be involved with project design or construction and must provide certifying document that lighting controls meet the performance criteria

Note: This infographic is for informational purposes only. Always refer to the code for specific requirements or contact your local Wattstopper representative.

ASHRAE is an acronym for the American Society of Heating, Refrigeration, and Air Conditioning Engineers.