

## Application Note

# Understand the differences between ASHRAE 90.1-2010 and ASHRAE 90.1-2007 and how to ensure code compliance.

## Overview

ASHRAE 90.1-2010 has increased lighting control requirements over previous versions. This application note summarizes the major differences between the 2010 and 2007 code versions in a side by side comparison. This document will help design professionals quickly see what changes have occurred. Design professionals should always review and understand the specific code language for project compliance and only use this document as a reference.



**Table 1. ASHRAE 90.1**

	2010	2007	What does this mean?
<b>Threshold for Triggering Code Compliance</b>	Any new construction projects and Retrofit projects involving alteration of $\geq 10\%$ of connected lighting load.	Any new construction projects and Retrofit projects involving alteration of $\geq 50\%$ of connected lighting load.	More projects will trigger the threshold for code compliance.
<b>Automatic Shut-off of Lighting</b>	Required in all spaces.	Required in buildings $> 5,000$ sq. ft.	All buildings regardless of size now require automatic shut-off.
<b>Additional Control Requirements</b>	All spaces must have a control device to control the lighting in the space. These devices must be either: <ul style="list-style-type: none"> <li>• Manual ON</li> </ul> or <ul style="list-style-type: none"> <li>• Automatic ON to 50% or less</li> </ul>	Enclosed spaces (individual rooms, areas enclosed by ceiling height partitions) must have a control device to control the general lighting in the space. This device can be either manual (e.g. switch) or automatic.	Requires Manual ON operation or if using Automatic ON, can not control more than 50% of the general lighting.
<b>Space Controls – more space types require Automatic OFF within 30 minutes</b>	The following spaces require the installation of an occupancy sensor or a time switch that turns lighting OFF within 30 minutes after the last occupant leaves the space: <ul style="list-style-type: none"> <li>• Classrooms</li> <li>• Lecture halls</li> <li>• Conference and meeting rooms</li> <li>• Training rooms</li> <li>• Employee lunch &amp; break rooms</li> <li>• All storage and supply rooms between 50-1000 sq. ft.</li> <li>• Rooms used for document copying and printing</li> <li>• All offices 250 sq. ft. or less</li> <li>• Restrooms</li> <li>• Dressing, locker, and fitting rooms</li> </ul>	The following spaces require the installation of an occupancy sensor or a time switch that turns lighting OFF within 30 minutes after the last occupant leaves the space: <ul style="list-style-type: none"> <li>• Classrooms</li> <li>• Conference and meeting rooms</li> <li>• Employee lunch and break rooms</li> </ul>	The only devices that comply are occupancy sensors and time switches. These must be configured as Manual ON or Automatic ON to 50% or less.
<b>Light Level Reduction</b>	Enclosed spaces must have controls that reduce the power level by 30-70% of full connected load in addition to turning OFF all lighting.	Not a requirement in 2007 code	Lighting must be wired to allow for a power reduction of 30 -70%, in addition to turning OFF the lighting either by dimming or multi-circuit switching.

# Cooper Lighting

by **EAT•N**

	2010	2007	What does this mean?
<b>Daylight Zones</b>	Automatic, multi-level daylighting controls must be installed in enclosed spaces with sidelit areas 250 sq. ft. or more and all toplit areas greater than 900 sq. ft.	Not a requirement in 2007 code	Daylighting control must be automatic based on natural light contribution. Daylight controls must be installed in spaces with windows or skylights.
<b>Parking Garage Lighting Controls</b>	<ul style="list-style-type: none"> <li>Lighting must be reduced automatically by at least 30% of connected power when motion is not detected within 30 minutes.</li> <li>Automatic daylighting controls must be installed for perimeter lighting.</li> </ul>	Not a requirement in 2007 code	The new ASHRAE 90.1 has incorporated many of the interior lighting requirements and incorporated them for parking garage lighting.
<b>Exterior Lighting</b>	<ul style="list-style-type: none"> <li>Lighting must be OFF during the day by photosensor.</li> <li>Lighting is regulated during the night so it is either OFF or operating at a reduced level depending on the purpose of the lighting.</li> </ul>	<ul style="list-style-type: none"> <li>Lighting must be OFF during the day (when daylight available)</li> </ul>	Exterior lighting must be OFF or at a reduced level during the night to increase energy savings.
<b>Automatic Receptacle Control</b>	50% of all receptacles in private offices, open offices, and computer classrooms must be automatically shut-off.	Not a requirement in 2007 code	To reduce energy waste, receptacle loads must be controlled as part of building design.
<b>System Commissioning</b>	All installed lighting controls must be tested and documentation must be submitted certifying compliance.	Not a requirement in 2007 code	System certification, calibration, adjustment must be submitted by a third party not involved in the design or construction of the project.

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