



# TRIGGERS for 2013 Title 24, Part 6

## Nonresidential

### Lighting Controls for New Construction

Application	Mandatory Measures							Prescriptive Requirements						
	Manual On and OFF Light Switch For Area Control § 130.1 (a) § 130.1 (b)	Automatic Shut-Off Control § 130.1 (c) § 130.3 (a)	Partial On/Off Occupancy Sensor § 130.1 (c)	Automatic Daylighting Control § 130.1 (d) § 130.1 (b)	Demand Responsive Control § 130.1 (e) § 130.1 (b) § 130.3 (a)	Photo-control § 130.2 (c)	Astronomical Time-Switch § 130.2 (c) § 130.3 (a)	PAF Credits (Table 140.6-A)					Automatic Daylight Control § 140.6 (d)	
								Partial-On Occupancy Sensor § 140.6 (a)	Occupant Sensor § 140.6 (a)	Dimming System § 140.6 (a)	Demand Responsive Control § 140.6 (a)	Combined manual Dimming and Partial On Occupant Sensor § 140.6 (a)		
All buildings and space types <sup>1</sup>	YES	YES <sub>3,A</sub>	no	YES <sub>B</sub>	no	no	no	no	no	no	no	no	no	YES (For Secondary daylight zone) <sub>7</sub>
Enclosed spaces >= 100 sq. ft. and > 1 luminaire with > 2 lamps with LPD > 0.5 W/sq. ft. <sub>2</sub>	YES <sub>K</sub>	–	no	YES <sub>K</sub>	YES <sub>K</sub>	no	no	–	–	no	–	–	–	–
Offices <=250 sq. ft., multi-purpose rooms <1,000 sq. ft., any size classrooms, conference rooms	–	YES <sub>D</sub>	no	–	no	no	no	–	–	no	–	–	–	–



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								Partial-On Occupancy Sensor § 140.6 (a)	Occupant Sensor § 140.6 (a)	Dimming System § 140.6 (a)	Demand Responsive Control § 140.6 (a)	Combined manual Dimming and Partial On occupant sensor § 140.6 (a)	
Warehouse-Aisles and open areas	-	-	YES <sub>E</sub>	-	no	no	no	-	-	no	-	-	-
Library - single ended stacks >=10 ft or double ended stacks >= 20ft <sub>F</sub>	-	-	YES <sub>F</sub>	-	no	no	no	-	-	no	-	-	-
Corridors and stairwells <sub>4</sub>	-	YES	YES <sub>F</sub>	-	no	no	no	-	-	no	-	-	-
Common area corridors and stairwells in hotel/motel, high rise residential	YES	no	YES <sub>P</sub>	-	no	no	no	-	-	no	-	-	-
Hotel/motel Guest room <sub>5</sub>	-	YES <sub>J</sub>	no	-	no	no	no	-	-	no	-	-	-
Parking Garage	-	no	YES <sub>I</sub>	YES <sub>B</sub>	no	no	no	-	-	no	-	-	YES
All buildings > 10,000 sq. ft. with habitable spaces LPD > 0.5 W/sq. ft.	-	-	no	-	YES <sub>Q</sub>	no	no	no	-	no	no	no	-



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								Partial-On Occupancy Sensor § 140.6 (a)	Occupant Sensor § 140.6 (a)	Dimming System § 140.6 (a)	Demand Responsive Control § 140.6 (a)	Combined manual Dimming and Partial On occupant sensor § 140.6 (a)	Automatic Daylight Control § 140.6 (d)
Open plan Office > 250 sq. ft.	–	–	no	–	no	no	no	no	YES <sub>s</sub>	no	–	no	–
Indoor Sign Lighting Control <sub>N</sub>	no	YES <sub>L</sub>	no	no	YES	no	YES <sub>L</sub>	no	no	no	no	no	no
Any enclosed space ≤ 250 sq. ft., any size classrooms, conference or waiting room	–	–	no	–	no	no	no	YES	–	no	–	YES	–
Hotel/motel, restaurants, auditoriums, theaters	–	–	no	–	no	no	no	–	YES	YES <sub>T</sub>	–	–	–
All outdoor lighting control	no	no	no	no	no	YES Photo control or Astronomical time-switch with automatic scheduling control		no	no	no	no	no	no
Outdoor Sign Lighting control	no	YES <sub>R</sub>	no	no	YES	YES <sub>R</sub>	YES <sub>R</sub>	no	no	no	no	no	no

Exceptions:

1. Except egress Lighting up to 0.2W/sq. ft.
2. Except classrooms < 0.7W/ sq. ft. and bi-level lighting with step between 30% and 70% of rated power
3. Except parking garage, hotel/motel high rise residential corridors, stairwells and continuously occupied areas, electrical rooms, egress lighting < 0.05W/sq. ft.

4. Except hotel/motel, high rise residential
5. Except one high efficacy luminaire controlled by a switch and within 6 feet of entry door.
6. Luminaires in daylight transition zone and dedicated ramps.
7. Except secondary daylight zone with general light < 120W and parking garage



Notes:

- A. All lighting controls should be equipped with automatic full shut-off control with occupancy sensor, automatic time-switch, signal from another building or other control such that all lights can be automatically shut off when the space is unoccupied.
- B. Automatic daylighting controls are required in the sky lit and primary daylight zones of all spaces except parking garages > 24 sq. ft. of glazing per room and > 0.3W/sq. ft. and > 120W of general lighting in sky lit and primary side lit daylight zones. Parking garages with glazing area > 36 sq. ft. that do not fall in the daylight transition zone or dedicated ramps with lighting power in primary side lit zone > 60W require automatic daylighting controls for general lighting in combined primary and secondary daylight spaces.
- C. Automatic daylighting controls controlling primary and secondary side lit daylight zones for parking garage > 36 sq. ft. of opening or glazing area and general lighting > 60W in primary side lit daylight zone
- D. Automatic full shut-off occupancy sensor
- E. Occupant sensor per aisle and for open areas. Reduce power by 50%. If HID or LPD < 80% of area category LPD, reduce power by at least 40%.
- F. Occupant sensor per aisle or space. Reduce power by 50% when space is unoccupied.
- G. Occupant sensor per space. Reduce power by 50% when space is unoccupied. Lights on egress path on.
- H. Occupant sensor per space. Reduce power by 50% when space is unoccupied. If LPD<80% of area category LPD, reduce power by 40%
- I. One sensor per 500W of lighting and one control step between 20% and 50% or rated power. For HID lighting with mean efficacy > 75 lm/W control step between 20% and 60% of rated power.
- J. Automatic control, occupancy sensor or captive card key control for automatic shut-off.
- K. Number of control steps for multi-level lighting controls determined in accordance with Table 130.1-A. Each luminaire for multi-level lighting controls should be controlled by at least one of the following: Manual dimming, lumen maintenance, tuning, automatic daylighting control or demand responsive lighting control.
- L. Indoor sign lighting controlled with automatic time-switch control or astronomical time-switch control.
- M. Applicable for general lighting in Secondary daylight zone
- N. Allowed lighting power is calculated:
  - a. For general lighting using either Complete Building Method, Area Category Method or the Tailored Method.
  - b. For indoor sign lighting, maximum lighting power  $\leq$  product of illuminated sign area and 12W per sq. ft.
- O. Mandatory Requirements for Lighting Control:
  - a. Lighting control devices are regulated by Appliance Standards, Title 20.
    - i. Following self-controlled lighting controls requires certification from manufacturer as compliant with Title 20:
      - 1. Time-switch controls:
        - a. Automatic time-switch control
        - b. Astronomical time-switch control
        - c. Multi-level astronomical time-switch control
        - d. Outdoor astronomical time-switch control
      - 2. Daylighting controls:
        - a. Automatic daylighting control
        - b. Photo control
      - 3. Dimmers
      - 4. Occupant sensing controls:
        - a. Occupant sensors
        - b. Motion Sensors
        - c. Vacancy Sensors
    - ii. Lighting control systems are regulated by Title 24, Part 6 and should comply with § 110.9 (b).
    - iii. All lighting control systems require an Installation Certificate
- P. Partial on/off occupancy sensor that reduces lighting power by at least 50% when space is unoccupied or 40% if installed lighting power is < 80% of value allowed under Area Category Method.
- Q. Number of Control steps as per Table 130.1-A.
- R. Outdoor sign lighting controlled with photo-control in addition to an automatic time-switch control or astronomical time-switch control.
- S. PAF credit for occupant sensing controls in large offices varies with area of office. Adjustment factor for area = 250 sq. ft. is 0.4, 126 to 250 sq. ft. is 0.3 and 251 to 500 sq. ft. is 0.2.
- T. This credit applies to manual dimming and multi-scene programmable dimming.
- U. Refer to the Fenestration Trigger Sheet for minimum skylight requirements for daylight area coverage for spaces above 5,000 sq. ft. with high ceilings (above 15 feet).

Note in the above table **"YES"** denotes – the requirement applies for the application,  
"no" denotes – the requirement does not apply for the application and  
"–" denotes- the requirement will be same as requirement for "all buildings and space types" unless noted otherwise under any other applicable Application type.

**Disclaimer:** this sheet provides an overview of key lighting control requirements in the Standards, but does not show exact requirements for compliance in all situations. For details, see the Title 24 Standards language, applicable Title 24 Standards language, and Nonresidential Compliance Manual.

