NYCECC 2020: Application Summary

ASHRAE 90.1-2016 Compliance Path

LUTRON

Suggested energy code solutions for commercial buildings

The compliant solutions listed below are suggested based on total installed cost, simplicity of design, and basic functional needs for the space. These solutions represent one of multiple compliant options to meet lighting and receptacle control requirements.

Diagram key:

◉ = New construction ⚙ = Lighting retrofit[1] ⚙ = New construction and retrofit[1]

		Atrium	Classroom, Lecture Hall, Training Room	Conference, Break Room	Corridor[2]	Guestroom[3]	Lobby[4]	Open Office (>300 sq. ft.)[7]	Parking Garage[5]	Private Office (<300 sq. ft)	Restaurant/ Cafeteria, Dining Areas	Restroom	Stairwell[2]	Storage Room	Warehouse and Library Stacks[5]	Facade/ Landscape	Other Exterior[6]
Manual Control	Switch					⚙								⚙			
	Dimmer or scene control	⚙	⚙	⚙	⚙		⚙	⚙	⚙	⚙	⚙				⚙		
Automatic ON/OFF Control	Timeclock	⚙					⚙		⚙		⚙				⚙	⚙	⚙
	Occupancy sensor		⚙	⚙	⚙	⚙	◉	⚙	⚙	⚙	⚙	⚙	⚙	⚙	◉		⚙
Settings	Full ON				⚙		⚙		⚙			⚙	⚙			⚙	⚙
	Partial ON	⚙						⚙			⚙				⚙		
	Manual ON		⚙	⚙		⚙				⚙				⚙			
	Full OFF [8]	⚙	⚙	⚙		⚙	⚙	⚙	⚙	⚙	⚙	⚙		⚙	⚙	⚙	⚙
	Partial OFF				⚙		⚙	⚙[7]	⚙		⚙[7]		⚙		⚙		⚙
Other	Daylight responsive control	◉	◉	◉	◉		◉	◉	◉	◉		◉	◉	◉	◉		
	Receptacle control		◉	◉		◉		◉		◉							
	Demand response																

1 Retrofit requirements indicated are for lighting alterations greater than 10% of the connected load in a space.

2 To comply with some life safety code requirements for egress illumination, automatic full OFF is not suggested. For non-egress areas, the occupancy sensor should turn the lights to full OFF and a switching control may be used.

3 Automatic OFF is required for all luminaires and switched receptacles.

4 When typically occupied, the occupancy sensor provides partial OFF functionality. When typically unoccupied, the sensor provides full OFF functionality.

5 When typically occupied, the sensor provides Partial OFF functionality. When typically unoccupied, the sensor provides Full OFF functionality. For entrances and exits, daylight responsive control is not required nor recommended, and the maximum light level is set to 50% at night.

6 Astronomical timeclock shall ensure all lights are off during daylight hours. Lights should be scheduled to partial OFF during night hours (not required in lighting retrofits). See section 9.4.1.4 for scheduling times

7 Control zones are limited to 600 sq. ft. or less. Once a zone is vacant for 15 minutes, the occupancy sensor automatically reduces lighting in the zone by 80% of full light output or turns lighting OFF in the vacant zone.

8 Sensor(s) automatically turns lighting OFF in the entire space within 15 minutes of vacancy in the whole space.

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Code requirement summary

	Minimum control type		Description	Code provision
Manual Control	Switch		Lighting shall be capable of turning ON and OFF. There shall be at least one manual device for control of the lighting within a space. See code for spaces that allow remote location of control.	9.4.1.1 (a)
	Dimmer or scene control		Lighting shall be capable of providing at least one level between 30% and 70% of full power, in addition to ON and OFF. There shall be at least one manual device for control of the lighting within a space. See code for spaces that allow remote location of control.	9.4.1.1 (a) 9.4.1.1 (d)
Automatic ON/OFF Control	Timeclock		**Interior:** Scheduled control, based on time-of-day, turns lighting ON or OFF based on typical occupancy. Occupancy sensors also comply as an alternate to using a timeclock. **Exterior:** Scheduled control, based on time-of-day and sunrise/sunset, turns lighting ON or OFF based on typical occupancy and daylight (requires astronomical timeclock).	9.4.1.1 (i) 9.4.1.2 (a) & (c) 9.4.1.4 (a), (b), & (c)
	Occupancy sensor		Automatic control turns lighting ON upon occupancy or OFF after a vacancy of 15 minutes or less.	9.4.1.1 (g) + (h) 9.4.1.2 (b)
	Settings	Full ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to maximum lighting power.	9.4.1.1 (g) & (h)
		Partial ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to 50% or less of maximum lighting power.	9.4.1.1 (c)
		Manual ON	Lighting is turned ON manually by an occupant.	9.4.1.1(b)
		Full OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically turned OFF.	9.4.1.1 (h)
		Partial OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically reduced by at least 50% of maximum lighting power (30% for enclosed parking garages and exterior). Automatic full OFF also complies.	9.4.1.1 (g) 9.4.1.2 (b) & (c) 9.4.1.4 (c)
Other	Daylight responsive control		**Interior:** A sensor which adjusts lighting in response to available daylight is required for sidelight and skylight zones. There must be at least two light levels between ON and OFF. See the "Daylight Zone Requirements" diagrams for more information. The perimeter 20 ft. of parking garages with access to daylight must automatically reduce lighting power in response to daylight. **Exterior:** A photosensor can be used as an alternate to the dawn/dusk operation of an astronomical timeclock.	9.4.1.1 (e) 9.4.1.1 (f) 9.4.1.2 (d) 9.4.1.4 (a)
	Receptacle control		At least 50% of the receptacles in the space shall automatically turn OFF based on typical occupancy or after a vacancy of 20 minutes or less. Plug-in devices do not comply.	8.4.2
	Demand response		Demand response is not required by this energy code.	N/A

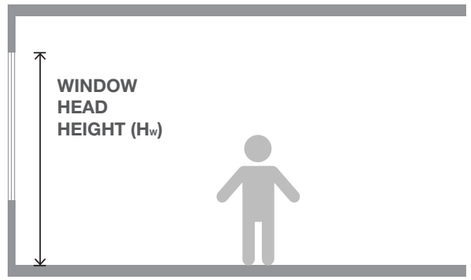
For areas being used as a path of egress or fixtures being used for emergency, verify compliance with your local authority having jurisdiction. Acceptance (functional) testing is required for all new construction applications to ensure that control hardware and software are calibrated, programmed and functioning properly (Code provision 9.7.3.1).

Daylight zone requirements

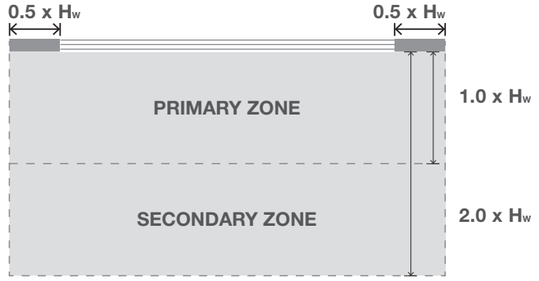
Daylight Zone Requirements:
Fixtures in the primary and secondary daylight zones must be independently controlled by zone. Sidelighted zones must be controlled separately from top lighted zones.

Daylight Exceptions:
Daylight control is not required when the total lighting power of a daylight zone is less than 100W or when the total glazing area is less than 20 sq. ft.

Sidelighting (Window)

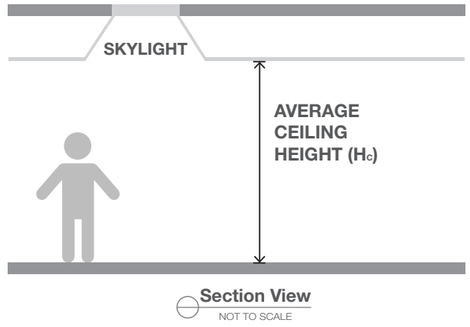


Section View
NOT TO SCALE

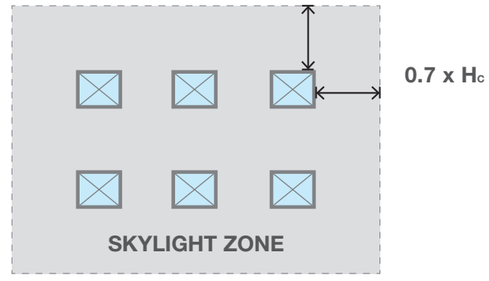


Plan View
NOT TO SCALE

Toplighting (Skylight)



Section View
NOT TO SCALE



Plan View
NOT TO SCALE

This document summarizes the lighting and receptacle control requirements for commercial buildings. It is for information purposes only. It is not meant to replace your state's or local jurisdiction's official energy code. Please refer to your local building energy code or authority having jurisdiction for your precise requirements. Only the authority having jurisdiction can guarantee code compliance.

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