

Suggested energy code solutions for commercial buildings

The code-compliant solutions listed below are suggested based on total installed cost, simplicity of design, and basic functional needs of the space. These solutions represent one of multiple code-compliant options to meet lighting and receptacle control requirements.¹

Diagram key:

= New construction and retrofit

		Atrium	Classroom, Lecture Hall, Training Room	Conference, Break Room	Corridor ²	Guestroom ³	Lobby ⁴	Open Office (>300 sq. ft.)	Parking Garage ^{4,5}	Private Office (<300 sq. ft.)	Restaurant/Cafeteria, Retail	Restroom	Stairwell ²	Storage Room	Warehouse and Library Stacks ⁴	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																
Partial OFF																		
Other	Daylight responsive control																	
	Receptacle control																	
	Demand response ⁹																	

1 The suggested code-complaint solutions are for new buildings greater than 25,000 ft² or existing buildings with more than 2000W off new or retrofitted lighting.

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. Bathrooms must have a separate, automatic OFF control for lighting.

4 The occupancy sensor provides partial OFF functionality during business hours. The timeclock provides full OFF functionality after hours.

5 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. For lights mounted below 24 ft. provide occupancy sensing to Partial OFF. All other lighting shall be scheduled to Partial OFF. 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 20 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 Not required for sidelight daylight zones in retail spaces.

9 Demand responsive lighting (i.e., lighting load management) is one of the energy credits that projects may choose.

Go to lutron.com/energycodes for complete details

Energy Code Lookup Tool lutron.com/energycodes

Energy Code Application Guides lutron.com/appguides

Energy Codes Email energycodes@lutron.com

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	The general lighting in the space shall be manually controlled with continuous dimming to 10% or less of full lighting power in addition to full ON and full OFF.	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) & (j) 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 20 minutes or less (15 minutes for exterior).	9.4.1.1 9.4.1.2 (b) 9.4.1.4 (d)	
	Settings	Full ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to maximum lighting power.	9.4.1.1 (c)
		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 parking garages). Automatic full OFF also complies.	9.4.1.1 (g) 9.4.1.2 (b) & (c) 9.4.1.4 (c) & (d)	
Other	Daylight responsive control	Interior: A sensor which adjusts lighting in response to available daylight is required for sidelight and skylight zones. The lighting must adjust using continuous daylight dimming to 20% or less and OFF. See the “Daylight Zone Requirements” diagrams for more information. The perimeter 20ft. of parking garages with access to daylight must automatically reduce lighting power by at least 50% 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 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 responsive lighting, or lighting load management, is an optional energy credit for project compliance. To earn this credit, at least 50% of the project area must have a lighting system that reduces load by 20% during peak price periods.	11.5.2.8.1	

Daylight zone requirements

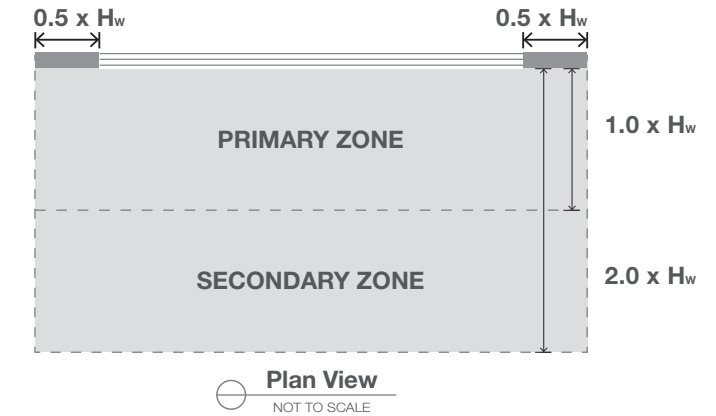
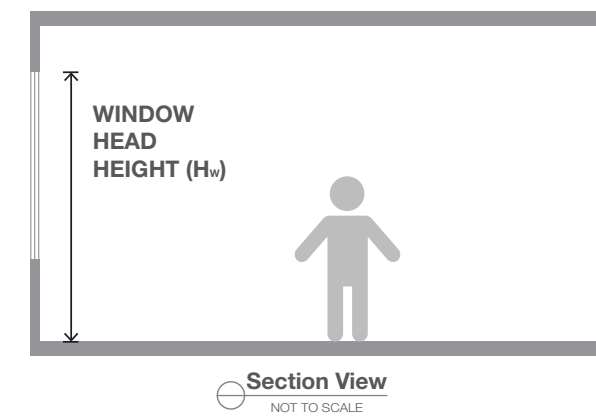
Daylight Zone Requirements:

Fixtures in the primary and secondary daylight zones must be independently controlled by zone. Sidelighted zones must be controlled separately from toplighted zones.

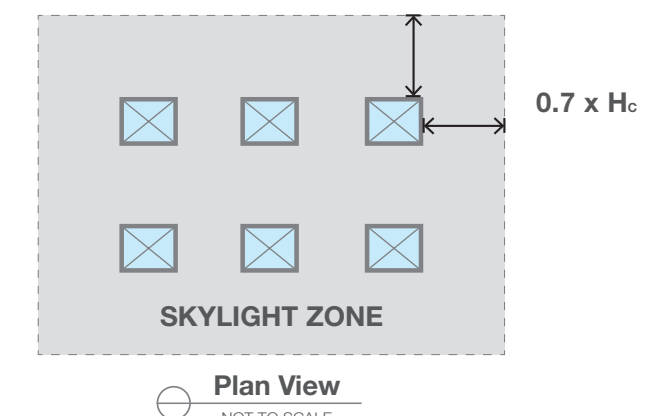
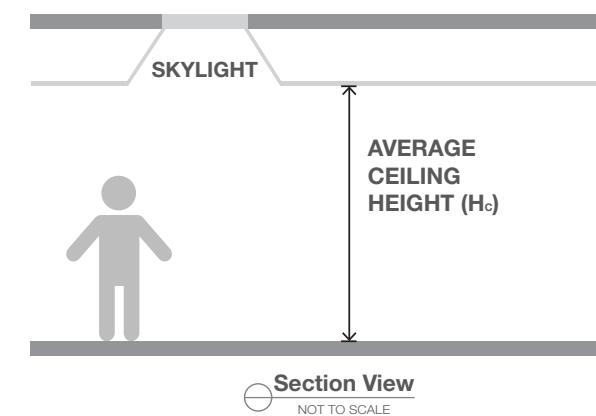
Daylight Exceptions:

Daylight control is not required when the total lighting power in all daylight zones in a space is less than 75W or when the total glazing area is less than 20 ft².

Sidelighting (Window)



Toplighting (Skylight)



Acceptance (functional) testing is required for all new construction applications to ensure that control hardware and software are calibrated, programmed and functioning properly (section 9.9). Office, retail, and school projects that are less than 25,000 ft² may pursue the simplified compliance path where the lighting power density is more stringent but the control requirements are less stringent than the traditional compliance path.

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. The recommendations presented in this guide are based on the originally published code prior to addenda. 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.