## 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
- New construction and retrofit

### Manual Control

- **Switch**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Dimmer or scene control**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

### Automatic ON/OFF Control

- **Timeclock**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Occupancy sensor**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Partial ON**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Manual ON**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Full OFF**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Partial OFF**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

### Other

- **Daylight responsive control**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Receptacle control**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

- **Demand response**
  - Atrium
  - Classroom, Lecture Hall, Training Room
  - Conference, Break Room
  - Corridor
  - Guestroom
  - Lobby
  - Open Office (>250 sq. ft.)
  - Parking Garage
  - Private Office (<250 sq. ft.)
  - Restaurant/Cafeteria, Retail
  - Restroom
  - Stairwell
  - Storage Room
  - Warehouse and Library Stacks
  - Facade/Landscape
  - Other

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1. Retrofit requirements indicated are for lighting alterations greater than 20% 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. Bathrooms must have a separate automatic OFF control for lighting.
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. 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.

[Go to lutron.com/energycodes for complete details](https://www.lutron.com/energycodes)

Energy Code Lookup Tool: [lutron.com/energycodes](https://www.lutron.com/energycodes)

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24/7 Energy Code Hotline: 1-844-652-6330

Energy Codes Email: energycodes@lutron.com
When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON and OFF based on typical occupancy. Occupancy sensors also comply as an alternate to using a timeclock. Lighting is automatically reduced by at least 50% of maximum lighting power (30% for parking garages). Automatic control turns lighting ON upon occupancy or OFF after a vacancy of 20 minutes or less (15 minutes for exterior). Lighting is automatically turned OFF. See the “Daylight Zone Requirements” diagrams for more information. The daylight 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 perimater 20 ft. of parking garages with access to daylight must automatically reduce lighting power by at least 50% in response to daylight. A photosensor can be used as an alternate to the dawn/dusk operation of an astronomical timeclock.

Lighting is turned ON manually by an occupant.

Daylight Exceptions:
Daylight control is not required when the total lighting power of a daylight zone is less than 150W or when the total glazing area is less than 20 sq. ft.

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.

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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 9.4.3.)