

CECD1-3-22

IECC: C405.2.1, C405.2.1.1, C405.2.1.2, C406.2.5.3.1, C406.2.5.3.2, C406.2.5.3.3

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2024 International Energy Conservation Code [RE Project]

Revise as follows:

C405.2.1 Occupant sensor controls. Occupant *sensor controls* shall be installed to control lights in the following space types:

1. Classrooms/lecture/training rooms.
2. Computer room, data center.
3. Conference/meeting/multipurpose rooms.
4. Copy/print rooms.
5. Corridors
6. Enclosed offices.
7. Laundry/washing area.
8. Locker rooms.
9. Lounges/breakrooms.
10. Medical supply room in a healthcare facility.
11. Open plan office areas.
12. Restrooms
13. Storage rooms.
14. Telemedicine room in a healthcare facility.
15. Warehouse storage areas.
16. Other spaces 300 square feet (28 m²) or less that are enclosed by floor-to-ceiling height partitions.

Exception: Luminaires that are required to have specific application controls in accordance with Section C405.2.5.

C405.2.1.1 Occupant sensor control function. Occupant sensor controls in warehouses ~~storage areas~~ shall comply with Section C405.2.1.2. Occupant sensor controls in open plan office areas shall comply with Section C405.2.1.3. Occupant sensor controls in corridors shall comply with Section C405.2.1.4. Occupant sensor controls for all other spaces specified in Section C405.2.1 shall comply with the following:

1. They shall automatically turn off lights within 20 minutes after all occupants have left the space.
2. They shall be manual on or controlled to automatically turn on the lighting to not more than 50-percent power.
3. They shall incorporate a manual control to allow occupants to turn off lights.

Exception: Full automatic-on controls with no manual control shall be permitted in ~~corridors~~, interior parking areas, stairways, restrooms, locker rooms, lobbies, library stacks and areas where manual operation would endanger occupant safety or security.

C405.2.1.2 Occupant sensor control function in warehouse storage areas. Lighting in warehouse storage areas shall be controlled as follows:

1. Lighting in each aisleway shall be controlled independently of lighting in all other aisleways and open areas.
2. Occupant sensors shall automatically reduce lighting power within each controlled area to an unoccupied setpoint of not more than 50 percent of full power within 20 minutes after all occupants have left the controlled area.
3. Lights that are not turned off by occupant sensors shall be turned off by time-switch control complying with Section C405.2.2.1.
4. A manual control shall be provided to allow occupants to turn off lights in the space.

Revise as follows:

C406.2.5.3.1 Occupant sensor controls. Occupant sensor controls shall be installed to control lights in the following space types:

- 1- ~~Courtroom~~
- 2- ~~Electrical/mechanical room~~

- ~~3-1.~~ Food preparation area
- ~~4-2.~~ Laboratory
- ~~5-3.~~ Elevator lobby
- ~~6-4.~~ Pharmacy area
- ~~7-5.~~ Vehicular maintenance area
- ~~8-6.~~ Workshop.
- ~~9-~~ Chapel in a facility for the visually impaired
- ~~10-7.~~ Recreation room in a facility for the visually impaired
- ~~11-8.~~ Exercise area in a fitness center
- ~~12-9.~~ Playing area in a fitness center
- ~~13-10.~~ Exam/treatment room in a healthcare facility
- ~~14-11.~~ Imaging room in a healthcare facility
- ~~15-12.~~ Physical therapy room in a healthcare facility
- ~~16-13.~~ Library reading area
- ~~17-14.~~ Library stacks
- ~~18-15.~~ Detailed manufacturing area
- ~~19-16.~~ Equipment room in a manufacturing facility
- ~~20-17.~~ Low-bay area in a manufacturing facility
- ~~21-18.~~ Post office sorting area
- ~~22-19.~~ Religious fellowship hall
- ~~23-~~ Religious worship/pulpit/choir area
- ~~24-20.~~ Hair salon
- ~~25-21.~~ Nail salon
- ~~26-22.~~ Banking activity area
- ~~27-~~ Computer room, data center
- ~~28-~~ Laundry/washing area
- ~~29~~ Medical supply room in a healthcare facility
- ~~30-~~ Telemedicine room in a healthcare facility
- ~~31-23.~~ Museum restoration room

C406.2.5.3.2 Occupant sensor control function. ~~Occupant sensor controls shall automatically turn lights off within 10 minutes after all occupants have left the space. A manual control complying with C405.2.6 shall allow occupants to turn off lights. Time switch controls are not required. Occupant sensors in library stacks and laboratories shall comply with C405.2.1.2. Occupant sensors in elevator lobbies shall comply with C405.2.1.4. All other occupant sensors required by C406.2.5.3.1 shall comply with C405.2.1.1.~~

Exception: In spaces where an automatic shutoff could endanger occupant safety or security occupant sensor controls shall uniformly reduce lighting power to not more than 20 percent of full power within 10 minutes after all occupants have left the space. Time-switch controls complying with C405.2.2.1 shall automatically turn lights off.

C406.2.5.3.3 Occupant sensor time delay and setpoint function. ~~Occupant sensor controls installed in accordance with Sections C405.2.1.1, C405.2.1.2, C405.2.1.3, and C405.2.1.4 shall automatically turn lights off or reduce lighting power within 10 minutes after all occupants have left the space. Occupant sensor controls installed in accordance with Section C405.2.1.2 shall have an unoccupied setpoint of not greater than 20 percent of full power. Where lighting power is reduced, the unoccupied setpoint shall be 20 percent of full power or in egress areas to the power level required to meet egress light levels.~~

Reason: Several space types that were originally proposed to be included in the Additional Efficiency Requirements of L03 are moved into “base code” so that they will be required on all projects. Several other space types are removed from L03 (Courtroom, Chapel, and Religious Worship) due to concerns about functional problems. Electrical / mechanical rooms are removed from L03 because this may prevent too many projects from selecting this credit (not many people put occupant sensors in switchgear rooms for safety reasons).

Occupant sensor function for laboratories and library stacks is grouped with warehouses in C405.2.1.2. This section best describes the function required of the occupant sensors in spaces which are continuously occupied but have aisles with shelving that extends close to the ceiling.

Occupant sensor function for elevator lobbies is grouped with corridors in C405.2.1.4 because they have essentially the same functional and life safety requirements.

The unoccupied setpoint is reduced to 20% in C405.2.1.2 (laboratories, library stacks, and warehouses) in L03.

The unoccupied setpoint in C405.2.1.3 (open office) is already 20% and does not need to be mentioned in L03.

The unoccupied setpoint in C405.2.1.4 needs to remain at 50% in L03 to allow for code-minimum egress illuminance levels to be maintained. Recall that occupant sensors may not work in smoke, so cannot be relied on to sense motion and turn lights on in corridors during a fire. Language about meeting egress lighting levels was removed assuming that occupants egress from aisles in warehouses not through them.

Cost Impact: The code change proposal will decrease the cost of construction.

For projects pursuing L03 this proposal would result in a reduction in construction costs because occupant sensors would be required in fewer space types. For projects not pursuing L03, this code change proposal will increase the cost of construction because occupant sensors will be required in more space types for base code compliance.