

# CECD1-21-22

IECC: C405.1, C405.2, C405.2.5, C405.3, C405.3.2.1, C405.3.2.2, C405.1.1

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## 2024 International Energy Conservation Code [CE Project]

Revise as follows:

**C405.1 General.** Electrical power and lighting systems and generation shall comply with this section. ~~Sleeping units shall comply with Section C405.2.5 and with Section C405.1.1.~~ *General lighting* shall consist of all lighting included when calculating the total connected interior lighting power in accordance with Section C405.3.1 and which does not require specific application controls in accordance with Section C405.2.5.

**Exception:** Dwelling units and sleeping units that comply with Section C405.2.10 Section C405.3.3 and Section C405.6.

**C405.2 Lighting controls.** Lighting systems powered through the energy service for the building shall be provided with controls that comply with Sections C405.2.1 through ~~C405.2.9~~ C405.2.10.

**Exceptions:** Lighting controls are not required for the following:

1. Spaces where an automatic shutoff could endanger occupant safety or security.
2. Interior exit stairways, interior exit ramps and exit passageways.
3. Emergency lighting that is automatically off during normal operations.
4. Emergency lighting required by the *International Building Code* in exit access components which are not provided with fire alarm systems.
5. Up to 0.02 watts per square foot (0.06 W/m<sup>2</sup>) of lighting in exit access components which are provided with fire alarm systems.

**C405.2.5 Specific application controls.** Specific application controls shall be provided for the following:

1. The following lighting shall be controlled by an occupant sensor complying with Section C405.2.1.1 or a time-switch control complying with Section C405.2.2.1. In addition, a manual control shall be provided to control such lighting separately from the general lighting in the space:
  - 1.1. Luminaires for which additional lighting power is claimed in accordance with Section C405.3.2.2.1.
  - 1.2. Display and accent lighting, including lighting in display cases.
  - 1.3. Lighting in display cases.
  - 1.3. Supplemental task lighting, including permanently installed under-shelf or under-cabinet lighting.
  - 1.4. Lighting equipment that is for sale or demonstration in lighting education.
2. *Sleeping units* shall have control devices or systems that are configured to automatically switch off all installed luminaires and switched receptacles within 20 minutes after all occupants have left the unit.

**Exceptions:**

1. Lighting and switched receptacles controlled by card key controls in buildings containing fewer than 50 sleeping units.
2. Spaces where patient care is directly provided.
3. Lighting for nonvisual applications, such as plant growth and food warming, shall be controlled by a time switch control complying with Section C405.2.2.1 that is independent of the controls for other lighting within the room or space.
4. Task lighting for medical and dental purposes that is in addition to *general lighting* shall be provided with a *manual control*.

Revise as follows:

**C405.3 Interior lighting power requirements.** A building complies with this section where its total connected interior lighting power calculated under Section C405.3.1 is not greater than the interior lighting power allowance calculated under Section C405.3.2. Sleeping units and dwelling units shall comply with C405.3.3.

**C405.3.2.1 Building Area Method.** For the Building Area Method, the interior lighting power allowance is calculated as follows:

1. For each building area type inside the building, determine the applicable building area type and the allowed lighting power density for that type from Table C405.3.2(1). For building area types not listed, select the building area type that most closely represents the use of that area. For the purposes of this method, an "area" shall be defined as all contiguous spaces that accommodate or are associated with a single building area type.
2. Determine the floor area for each building area type listed in Table C405.3.2(1) and multiply this area by the applicable value from Table C405.3.2(1) to determine the allowed lighting power (watts) for each building area type. Sleeping units and dwelling units are excluded from lighting power allowance calculations by application of Section ~~C405.1.1~~ C405.3.3. The area of sleeping units and dwelling units is not included in the calculation.
3. The total interior lighting power allowance (watts) for the entire building is the sum of the lighting power from each building area type.

**C405.3.2.2 Space-by-Space Method.** Where a building has unfinished spaces, the lighting power allowance for the unfinished spaces shall be the total connected lighting power for those spaces, or 0.1 watts per square foot ( 1.08 w/m<sup>2</sup>), whichever is less. For the Space-by-Space Method, the interior lighting power allowance is calculated as follows:

1. For each space enclosed by partitions that are not less than 80 percent of the ceiling height, determine the applicable space type from Table C405.3.2(2). For space types not listed, select the space type that most closely represents the proposed use of the space. Where a space has multiple functions, that space may be divided into separate spaces.
2. Determine the total floor area of all the spaces of each space type and multiply by the value for the space type in Table C405.3.2(2) to determine the allowed lighting power (watts) for each space type. Sleeping units and dwelling units are excluded from lighting power allowance calculations by application of Section ~~C405.1.1~~ C405.3.3. The area of sleeping units and dwelling units is not included in the calculation.
3. The total interior lighting power allowance (watts) shall be the sum of the lighting power allowances for all space types.

~~C405.1.1~~ **C405.3.3 Lighting power for sleeping units and dwelling units.** ~~No less than 90 percent of the *Sleeping units* in Group I-2 occupancies that are patient rooms shall comply with C405.3.1 and C405.3.2. For all other *sleeping units* and *dwelling units*, permanently installed lighting serving sleeping units and dwelling units including lighting integrated into range hoods and exhaust fans, shall be provided by lamps with an efficacy of not less than 65 lm/W or luminaires with an efficacy of not less than 45 lm/W.~~

**Exceptions:**

1. Lighting integral to a kitchen appliance ~~or exhaust hood~~.
2. Antimicrobial lighting used for the sole purpose of disinfecting.

**Reason:** This proposal is based on CED1-26 as modified by the PLR (not yet heard by the E4C). CED1-26 is a reorganization for clarity of the specific requirements for sleeping units and dwelling units.

- C405.1 currently says that all "lighting systems" must comply with C405 and then goes on to list requirements specific to sleeping units and dwelling units. Read literally, sleeping units and dwelling units still must comply with everything else in C405. Obviously, that is not the intent – but that is what the code says.
- C405.1 currently says that sleeping units have to comply with C405.2.5 Specific application controls. Taken literally, this would mean if you had accent lighting or task lighting in a hotel room it would have to be controlled by an occupancy sensor or time-switch. Obviously, that is not the intent – but that is what the code says.
- An exemption to C405.1 has been added to make it clear that sleeping units and dwelling units must only comply with C405.2.10, C405.3.3, C405.6 and nothing else.
- Currently, there are two types of requirements that apply to sleeping units and dwelling units – lighting controls and lighting power. This proposal rearranges these requirements and puts them where they belong – in new sections C405.2.10 (lighting controls) and C405.3.3 (lighting power)
- An additional sentence is added to C405.3 to improve clarity. This is not a change in the requirements.

Text is added to C405.3.3 with different lighting power requirements for sleeping units in Group I-2 that are patient rooms. This is to accommodate CED1-9 which proposes to restore the patient room lighting power allowance to Table C405.3.2 (2)

**Cost Impact:** The code change proposal will neither increase nor decrease the cost of construction.

The code change proposal will neither increase nor decrease the cost of construction. These minor revisions will have no significant effect on the

cost of lighting equipment required.