

**Dwelling unit lighting issue attempted resolution:**

**C405.1 General.** Lighting system controls, the maximum lighting power for interior and exterior applications, electrical energy consumption, vertical and horizontal transportation systems, and minimum efficiencies for motors and transformers shall comply with this section.

*Sleeping units* shall comply with Section C405.2.6, item 2 and Section C405.1.1 or Section C405.4. General lighting shall consist of all lighting included when calculating the total connected interior lighting power in accordance with Section C405.4.1 and which does not require specific application controls in accordance with Section C405.2.5.

Transformers, uninterruptable power supplies, motors and electrical power processing equipment in *data center* systems shall comply with Section 8 of ASHRAE Standard 90.4 in addition to this code.

**C405.1.1 Lighting efficacy for dwelling units and sleeping units.** No less than 90 percent of the luminaires serving *dwelling units* and *sleeping units*, excluding lighting integral to kitchen appliances, shall be provided by lamps with a minimum efficacy of 65 lumens per watt or luminaires with a minimum efficacy of 45 lumens per watt or shall comply with Sections C405.2.5 and C405.3.

**C405.2.6 Additional lighting controls.** Specific application lighting shall be provided with controls, in addition to controls required by other sections, 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 C405.4.2.2.1.
  - 1.2. Display and accent.
  - 1.3. Lighting in display cases.
  - 1.4. Supplemental task lighting, including permanently installed under-shelf or under-cabinet lighting.
  - 1.5. Lighting equipment that is for sale or demonstration in lighting education.
  - 1.6. Display lighting for exhibits in galleries, museums and monuments that is in addition to general lighting.
2. *Sleeping units* shall have control devices or systems configured to automatically switch off all permanently 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.
  2. Spaces where patient care is directly provided.
3. Permanently installed luminaires within *dwelling units* shall be provided with controls complying with either Section C405.2.1.1 or C405.2.4.1.

**Comment:** C405.2.1.1 is the occ sensor controls function section, and C405.2.4.1 is the light reduction controls section, which would mean that everything in the dwelling unit should be on dimmer switches.

**Commented [DJ1]:** Auto-off controls

**Commented [DJ2]:** LPA 0.41 in "guest rooms"

**Commented [DJ3]:** Gotta leave this in since it's referenced in the paragraph above.

**Commented [DJ4]:** There's no reference to dwelling units in C405.2.6. Sleeping units are already required to comply with C405.2.6, and there's no LPA requirement for dwelling units in C405.4

**Comment:** Need to get rid of footnotes at bottom of the Building Area Method table, since they no longer apply.

**TABLE C405.4.2(1)  
INTERIOR LIGHTING POWER ALLOWANCES: BUILDING AREA METHOD**

Building Area Type	LPD (w/ft <sup>2</sup> )
Automotive facility	0.64 [0.75]
Convention center	0.64
Court house	0.79
Dining: Bar lounge/leisure	0.79 [0.80]
Dining: Cafeteria/fast food	0.72 [0.76]
Dining: Family	0.71
Dormitory <sup>a,b</sup>	0.46 [0.53]
Exercise center	0.67 [0.72]
Fire station <sup>a</sup>	0.54 [0.56]
Gymnasium	0.75 [0.76]
Health care clinic	0.70 [0.81]
Hospital <sup>a</sup>	0.84 [0.96]
Hotel <sup>a,b</sup>	0.56
Library	0.83
Manufacturing facility	0.82
Motion picture theater	0.44
Multiple family <sup>c</sup>	0.41 [0.45]
Museum	0.55
Office	0.64
Parking garage	0.14 [0.18]
Penitentiary	0.65 [0.69]
Performing arts theater	0.84
Police station	0.66
Post office	0.65
Religious building	0.67
Retail	0.84
School/university	0.70 [0.72]
Sports arena	0.62 [0.76]
Town hall	0.69
Transportation	0.50
Warehouse	0.40 [0.45]
Workshop	0.91

- a.—Where sleeping units are excluded from lighting power calculations by application of Section R404.1, neither the area of the sleeping units nor the wattage of lighting in the sleeping units is counted.
- b.—Where dwelling units are excluded from lighting power calculations by application of Section R404.1, neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.
- c.—Dwelling units are excluded. Neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.

**Comment:** Need to get rid of footnotes g and h of the Space-by-Space Method table, since they no longer apply.

For SI: 1 foot = 304.8 mm, 1 watt per square foot = 11 W/m<sup>2</sup>.

- a. In cases where both a common space type and a building area specific space type are listed, the building area specific space type shall apply.
- b. A facility for the visually impaired is a facility that is licensed or will be licensed by local or state authorities for senior long-term care, adult daycare, senior support or people with special visual needs.
- c. For spaces in which lighting is specified to be installed in addition to, and controlled separately from, the general lighting for the purposed of highlighting art or exhibits, provided that the additional lighting power shall not exceed 0.5 W/ft<sup>2</sup> of such spaces.
- d. RESERVED.
- e. RESERVED.
- f. RESERVED.
- ~~g. RESERVED. Where sleeping units are excluded from lighting power calculations by application of Section R404.1, neither the area of the sleeping units nor the wattage of lighting in the sleeping units is counted.~~
- ~~h. RESERVED. Where dwelling units are excluded from lighting power calculations by application of Section R404.1, neither the area of the dwelling units nor the wattage of lighting in the dwelling units is counted.~~
- i. Class I facilities consist of professional facilities; and semi-professional, collegiate or club facilities with seating for 5,000 or more spectators.
- j. Class II facilities consist of collegiate and semi-professional facilities with seating for fewer than 5,000 spectators; club facilities with seating between 2,000 and 5,000 spectators; and amateur league and high school facilities with seating for more than 2,000 spectators.
- k. Class III facilities consist of club, amateur league and high school facilities with seating for 2,000 or fewer spectators.
- l. Class IV facilities consist of elementary school and recreational facilities; and amateur league and high school facilities without provisions for spectators.
- m. For classrooms, additional lighting power allowance of 4.50 W/lineal foot of white or chalk boards for directional lighting dedicated to white or chalk boards.
- n. Additional lighting power allowance of 0.30 W/square foot for ornamental lighting. Qualifying ornamental lighting includes luminaires such as chandeliers, sconces, lanterns, neon and cold cathode, light emitting diodes, theatrical projectors, moving lights and light color panels when any of those lights are used in a decorative manner that does not serve as display lighting or general lighting.

