

**THE INTERNATIONAL ENERGY CONSERVATION CODE-COMMERCIAL  
ERRATA COMMENTS INCORPORATED INTO PUBLIC COMMENT DRAFT #2**

(7/18/23)

**Introduction**

The following document contains public comments submitted during the public comment period for the legislative changes to the IECC Commercial Public Comment Draft #1 ending June 29, 2023 that were resolved as errata and incorporated into the 2024 IECC Commercial Public Comment Draft #2.

First Printing

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by

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# Errata air leakage section (1749)

IECC CE: C402.6.1.2, C402.6.1.3, C402.6.2.1

## Proponents:

Theresa Weston, representing Air Barrier Association of America (ABAA) (holtweston88@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

### C402.6.1.2 Air barrier construction.

The *continuous air barriers* shall be constructed to comply with the following:

1.	The <i>air barrier</i> shall be continuous for all assemblies that comprise the <i>building thermal envelope</i> <del>thermal envelope</del> <i>thermal envelope</i> and across the joints and assemblies.
2.	<i>Air barrier</i> joints and seams shall be sealed, including sealing transitions in places and changes in materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure differentials such as those from wind , stack effect and mechanical <i>ventilation</i> .
3.	Penetrations of the <i>air barrier</i> shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Sealing shall allow for expansion, contraction and mechanical vibration. Sealing materials shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure. Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the fire sprinkler manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.
4.	Recessed lighting fixtures shall comply with Section C402.6.1.2.1. Where similar objects are installed that penetrate the <i>air barrier</i> , provisions shall be made to maintain the integrity of the <i>air barrier</i> .
5.	Electrical and communication boxes shall comply with C402.6.1.2.2.

### C402.6.1.3 Air leakage compliance.

*Air leakage* of the *building thermal envelope* shall be tested by an *approved* third party in accordance with C402.6.2.1. The measured air leakage shall not be greater than 0.35 cfm/ft (1.8 L/s x m ) of the *building thermal envelope* area at a pressure differential of 0.3 inch water gauge (75 Pa) with the calculated *building thermal envelope* surface area being the sum of the above- and below-grade *building thermal envelope*.

**Exceptions:** Add optional paragraph text here

1.	Where the measured <i>air leakage</i> rate is greater than 0.35 cfm/ft <sup>2</sup> (1.8 L/s x m <sup>2</sup> ) but is not greater than 0.45 cfm/ft <sup>2</sup> (2.3 L/s x m <sup>2</sup> ), the <i>approved</i> third party shall perform a diagnostic evaluation using smoke tracer or infrared imaging. The evaluation shall be conducted while the <i>building</i> is pressurized or depressurized along with a visual inspection of the <i>air barrier</i> in accordance with ASTM E1186. All identified leaks shall be sealed where such sealing can be made without damaging existing <i>building</i> components. A report specifying the corrective actions taken to seal leaks shall be deemed to establish compliance with the requirements of this section where submitted to the <i>code official</i> and the <i>building owner</i> . Where the measured <i>air leakage</i> rate is greater than 0.45 cfm/ft <sup>2</sup> (2.3 L/s x m <sup>2</sup> ), corrective actions must be made to the <i>building</i> and an additional test completed for which the results are 0.45 cfm/ft <sup>2</sup> (2.3 L/s x m <sup>2</sup> ), or less.
2.	Buildings in <i>Climate Zone</i> 2B.
3.	Buildings larger than 25,000 square feet (2300 m <sup>2</sup> ) floor area in <i>Climate Zones</i> 0 through 4, other than Group R and I occupancies, that comply with C402.6.2.3
4.	As an alternative, buildings or portions of <i>building</i> , containing Group R-2 and I-1 occupancies, shall be permitted to be tested by an <i>approved</i> third party in accordance with C402.6.2.2. The reported <i>air leakage</i> of the <i>building</i> thermal envelope shall not be greater than 0.27 cfm/ft <sup>2</sup> (1.4 L/s x m <sup>2</sup> ) of the <i>testing unit enclosure area</i> at a pressure differential of 0.2 inch water gauge (50 Pa).

## C402.6.2.1 Whole building test method and reporting.

The *building thermal envelope* shall be tested by an *approved* third party for *air leakage* in accordance with ASTM E3158 or an equivalent *approved* method. A report that includes the tested surface area, floor area, air by volume, stories above grade, and *air leakage* rates shall be submitted to the *code official* and the *building owner*.

### Exceptions:

1.	For buildings less than 10,000 ft <sup>2</sup> (1000 m <sup>2</sup> ) the entire <i>building thermal envelope</i> shall be permitted to be tested in accordance with ASTM E779, ASTM E3158, ASTM E1827 or an equivalent <i>approved</i> method.						
2.	For buildings greater than 50,000 ft <sup>2</sup> (4645 m <sup>2</sup> ), portions of the <i>building</i> shall be permitted to be tested and the measured <i>air leakage</i> shall be area-weighted by the surface areas of the <i>building thermal envelope</i> in each portion. The weighted average tested <i>air leakage</i> shall not be greater than the whole <i>building air leakage</i> limit. The following portions of the <i>building</i> shall be tested: <table border="1" data-bbox="134 1409 1533 1738"> <tr> <td>2.1</td> <td>The entire <i>building thermal envelope</i> area of stories that have any conditioned spaces directly under a roof.</td> </tr> <tr> <td>2.2</td> <td>The entire <i>building thermal envelope</i> area of stories that have a <i>building</i> entrance, a floor over unconditioned space, a loading dock, or that are below grade.</td> </tr> <tr> <td>2.3</td> <td>Representative above-grade portions of the <i>building</i> totaling not less than 25 percent of the wall area enclosing the remaining <i>conditioned space</i>.</td> </tr> </table>	2.1	The entire <i>building thermal envelope</i> area of stories that have any conditioned spaces directly under a roof.	2.2	The entire <i>building thermal envelope</i> area of stories that have a <i>building</i> entrance, a floor over unconditioned space, a loading dock, or that are below grade.	2.3	Representative above-grade portions of the <i>building</i> totaling not less than 25 percent of the wall area enclosing the remaining <i>conditioned space</i> .
2.1	The entire <i>building thermal envelope</i> area of stories that have any conditioned spaces directly under a roof.						
2.2	The entire <i>building thermal envelope</i> area of stories that have a <i>building</i> entrance, a floor over unconditioned space, a loading dock, or that are below grade.						
2.3	Representative above-grade portions of the <i>building</i> totaling not less than 25 percent of the wall area enclosing the remaining <i>conditioned space</i> .						

### Reason:

This proposal is editorial. It italicizes defined terms and corrects some typos.

**Cost Impact:**

The code change proposal will neither increase nor decrease the cost of construction.

This proposal is editorial and makes no technical changes.

# C403.11.6 Heat recovery for space conditioning in healthcare facilities edit (1790)

IECC CE: C403.11.6

## Proponents:

Greg Johnson, representing National Multifamily Housing Council (gjohnsonconsulting@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

# C403.11.6 Heat recovery for space conditioning in healthcare facilities.

Where ~~heating~~ heated water is used for space heating, a heat pump chiller meeting the requirements of Table C403.3.2(15) for heat recovery ~~and that~~ uses the cooling system return water as the heat source shall be installed where the following are true:

1.	The <i>building</i> is a Group I-2, Condition 2 occupancy.
2.	The total design chilled water capacity for the Group I-2, Condition 2 occupancy, either air cooled or water cooled, required at cooling design conditions exceeds 3,600,000 Btu/h (1100 kw) of cooling.
3.	Simultaneous heating, including reheat, and cooling occurs above 60°F (16°C) outdoor air temperature.

The heat recovery system shall have a cooling capacity of not less than 7 percent of the total design chilled water capacity of the Group I-2, Condition 2 occupancy at peak design conditions.

### Exceptions:

1.	Buildings that provide 60 percent or more of their reheat energy from <i>on-site renewable energy</i> or other site-recovered energy. <i>On-site renewable energy</i> used to meet Sections C405.15.1 or C406.3.1 shall not be used to meet this exception.
2.	Buildings in Climate Zones 5C, 6B, 7 and 8.

### Reason:

There is some sketchy language in the draft, probably needing further refinement.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

editorial.

# Erratum - C403.7.4.1 (1558)

IECC CE: C403.7.4.1

## Proponents:

Mike Moore, representing Broan-NuTone (mmoore@statorllc.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C403.7.4.1 Nontransient dwelling units.

Nontransient dwelling units shall be provided with outdoor air energy recovery ~~ventilation systems with~~ outdoor air energy recovery ventilation systems complying with not less than one of the following: an enthalpy recovery ratio of not less than 50 percent at cooling design condition and not less than 60 percent at heating design condition.

1.	The system shall have an enthalpy recovery ratio of not less than 50 percent at cooling design condition and not less than 60 percent at heating design condition.
2.	The system shall have a sensible recovery efficiency (SRE) that is not less than 65 percent at 32 °F (0 °C) and, in climate zones 0A, 1A, 2A, and 3A, <del>having</del> shall have a net moisture transfer (NMT) that is not less than 40 percent at 95 °F (35 °C). SRE and NMT shall be determined from a <i>listed</i> value or from interpolation of <i>listed</i> values, at an airflow not less than the design airflow, based on testing in accordance with CAN/CSA C439.

### Exceptions:

1.	Nontransient dwelling units in <i>Climate Zone 3C</i> .
2.	Nontransient dwelling units with not more than 500 square feet (46 m <sup>2</sup> ) of <i>conditioned floor area</i> that are located in Climate Zones 0, 1, 2, 3, 4C and 5C <del>and either adjoin an open ended corridor or do not adjoin a corridor.</del>
3.	<del>Nontransient dwelling units with not more than 500 square feet (46 m<sup>2</sup>) of conditioned floor area that are located in Climate Zones 1A, 2B, 3B, and 3C.</del>
4. 3.	<i>Enthalpy recovery ratio</i> requirements at heating design condition in Climate Zones 0, 1 and 2.
5. 4.	<i>Enthalpy recovery ratio</i> requirements at cooling design condition in Climate Zones 4, 5, 6, 7 and 8.

### Reason:

This is an editorial erratum to correct the grammar in this section (i.e., removes duplicative phrase "with outdoor air energy recovery ventilation systems" in C403.7.4.1 and replaces "having" with "shall have" in option #2.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

There is an editorial modification.

# C405.14 EV Power Transfer Infrastructure - Editorial Fixes (1816)

IECC CE: C405.14.1, C405.14.2, C405.14.5.3.2

## Proponents:

Harold Jepsen, representing Legrand (harold.jepsen@legrand.us)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C405.14.1 Quantity.

The number of required EV spaces, EV capable spaces and EV ready spaces shall be determined in accordance with this Section and Table C405.14.1 based on the total number of automobile parking spaces and shall be rounded up to the nearest whole number. For R-2 buildings, the Table requirements shall be based on the total number of dwelling units or the total number of automobile parking spaces, whichever is less.

1.	Where more than one parking facility is provided on a <i>building</i> site, the number of required automobile parking spaces required to have EV power transfer infrastructure shall be calculated separately for each parking facility.
2.	Where one shared parking facility serves multiple <i>building</i> occupancies, the required number of spaces shall be determined proportionally based on the floor area of each <i>building</i> occupancy.
3.	Installed EVSE spaces that exceed the minimum requirements of this section may be used to meet minimum requirements for EV ready spaces and EV capable spaces.
4.	Installed EV ready spaces that exceed the minimum requirements of this section may be used to meet minimum requirements for EV capable spaces. [NOTE: hyphen strikeout on word "requirements"]
5.	Where the number of EV ready spaces allocated for R-2 occupancies is equal to the number of dwelling units or to the number of automobile parking spaces allocated to R-2 occupancies, whichever is less, requirements for EVSE spaces for R-2 occupancies shall not apply.
6.	Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table C405.14.1 shall be used.

**Exception:** Parking facilities, serving occupancies other than R2 with fewer than 10 automobile parking spaces.

## C405.14.2 EV Capable Spaces.

Each EV capable space used to meet the requirements of Section C405.14.1 shall comply with the following:

1.	A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the EV capable space and electrical distribution equipment.
2.	Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity in accordance with Section C405.14.5

3.	The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section C405.14.5 .
4.	The enclosure or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

## C405.14.5.3.2 Circuit Capacity Management.

Each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces controlled by an energy management system shall comply with one of the following:

1.	Have a minimum capacity of 25 amperes per space.
2.	Have a minimum capacity of 20 amperes per space for R-2 occupancies when all automobile parking spaces <u>are</u> EV ready spaces or EVSE spaces.

### Reason:

These changes are editorial. The change in C405.14.5.3.2 to add the word "are" correlates with CED1-39-22 and was not correct in the PC Draft1 version. The stringency, intent or application of the code is not altered with these changes.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

These changes are editorial and to correlate with approved changes from the 1st public comment period.



# Sections C405.14.2 - Errata (1861)

IECC CE: C405.14.2

## Proponents:

Vanessa Warheit, representing EV Charging for All Coalition/Plug In America (vwarheit@pluginaustralia.org)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C405.14.2 EV Capable Spaces.

Each EV capable space used to meet the requirements of Section C405.14.1 shall comply with the following:

1.	A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the EV capable space and electrical distribution equipment.
2.	Installed raceway or cable assembly shall be sized and rated to supply a minimum circuit capacity capacity in accordance with Section C405.14.5
3.	The electrical distribution equipment to which the raceway or cable assembly connects shall have dedicated overcurrent protection device space and electrical capacity to supply a calculated load in accordance with Section C405.14.5 .
4.	The enclosure or outlet and the electrical distribution equipment directory shall be marked: "For electric vehicle supply equipment (EVSE)."

### Reason:

Minor typos

### Bibliography:

n/a

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

n/a

# C405.2.3.1 Dimming Control Function - Editorial Fixes (1836)

IECC CE: C405.2.3.1

## Proponents:

Harold Jepsen, representing Legrand (harold.jepsen@legrand.us)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C405.2.3.1 Dimming control function.

Spaces required to have dimming control shall be provided with *manual* controls that allow lights to be dimmed from full output to 10 percent of full power or lower with continuous dimming, as well as turning lights off. *Manual* control shall be provided ~~which~~ within each room to dim lights

**Exception:** *Manual* dimming control is not required in spaces where *high-end trim* lighting controls are provided which comply with the following:

1.	<u>The calibration adjustment equipment is located for ready access only by authorized personnel. Occupant sensors will be required in more space types for base code compliance.</u>
2.	<u>Lighting controls with ready access for users cannot increase the lighting power above the maximum level established by the high-end trim controls.</u>

### Reason:

These editorial changes do two things:

1. Adds missing spaces between two words in the charging language.
2. Adds an incorrect word and the two exceptions which were approved in CECD1-4-22, yet, for some reason were missing in the PC Draft1 version.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

These changes are editorial and correlates missing language from proposal CECD1-4-22.

# Demand Responsive Lighting Controls (editorial change) (1880)

IECC CE: C405.2.8.1

## Proponents:

Michael Jouaneh, representing Lutron Electronics Co., Inc. (mjouaneh@lutron.com)

## 2024 International Energy Code[CE Project] R3

## Revise as follows:

### C405.2.8.1 Demand responsive lighting controls function.

Demand responsive lighting controls shall be capable of the following:

1.	Automatically reducing the output of demand responsive controlled lighting to 80 percent or less of full power or light output upon receipt of a <i>demand response signal</i> .
2.	Where <del>high end trim</del> <i>high end trim</i> has been set, automatically reducing the output of controlled lighting to 80 percent or less of the <i>high-end trim</i> set point upon receipt of a <i>demand response signal</i> .
3.	Dimming controlled lights gradually and continuously over a period of not longer than 15 minutes to get to their demand response setpoint.
4.	Returning lights to their normal operational settings at the end of the demand response event.

**Exception:** Warehouse and retail storage *building* areas shall be permitted to switch off 25 percent or more of *general lighting* power rather than dimming.

## Reason:

Italicizing "high-end trim" since it is a defined term.

## Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Editorial change.

# Table C405.3.2(2): Correctly locate patient room power allowance in table (1624)

IECC CE: TABLE C405.3.2(2)

**Proponents:**

Glenn Heinmiller, representing International Association of Lighting Designers (glenn@lampartners.com)

## 2024 International Energy Code[CE Project] R3

**Revise as follows:**

TABLE C405.3.2(2) INTERIOR LIGHTING POWER ALLOWANCES: SPACE-BY-SPACE METHOD

COMMON SPACE TYPES <sup>a</sup>	LPD (watts/ft <sup>2</sup> )
Atrium	
Less than 40 feet in height	0.41
Greater than 40 feet in height	0.51
Audience seating area	
In an auditorium	0.57
In a gymnasium	0.23
In a motion picture theater	0.27
In a penitentiary	0.56
In a performing arts theater	1.09
In a religious building	0.72
In a sports arena	0.27
Otherwise	0.33
Banking activity area	0.56
Breakroom (See Lounge/breakroom)	
Classroom/lecture hall/training room	
In a penitentiary	0.74
Otherwise	0.72
Computer room, data center	0.75
Conference/meeting/multipurpose room	0.88
Copy/print room	0.56
Corridor	

<b>COMMON SPACE TYPES</b>	<b>LPD (watts/ft<sup>2</sup>)</b>
In a facility for the visually impaired (and not used primarily by the staff) <sup>b</sup>	0.71
In a hospital	0.61
Otherwise	0.44
Courtroom	1.08
Dining area	
In bar/lounge or leisure dining	0.76
In cafeteria or fast food dining	0.36
In a facility for the visually impaired (and not used primarily by the staff) <sup>b</sup>	1.22
In family dining	0.52
In a penitentiary	0.35
Otherwise	0.42
Electrical/mechanical room	0.71
Emergency vehicle garage	0.51
Food preparation area	1.19
Laboratory	
In or as a classroom	1.05
Otherwise	1.21
Laundry/washing area	0.51
Loading dock, interior	0.88
Lobby	
For an elevator	0.64
In a facility for the visually impaired (and not used primarily by the staff) <sup>b</sup>	1.44
In a motion picture theater	0.20
In a performing arts theater	1.21
Otherwise	0.80
Locker room	0.43
Lounge/breakroom	
In a healthcare facility	0.77
Mother's Wellness Room	0.68

<b>COMMON SPACE TYPES</b>	<b>LPD (watts/ft<sup>2</sup>)</b>
Otherwise	0.55
Office	
Enclosed	0.73
Open plan	0.56
Parking area daylight transition zone	1.06
Parking area, interior	0.11
<del>Patient room</del>	<del>0.78</del>
Pharmacy area	1.59
Restroom	
In a facility for the visually impaired (and not used primarily by the staff <sup>b</sup> )	0.96
Otherwise	0.74
Sales area	0.85
Seating area, general	0.21
Security screening general areas	0.64
Security screening in transportation facilities	0.93
Security screening transportation waiting area	0.56
Stairwell	0.47
Storage room	0.35
Vehicular maintenance area	0.59
Workshop	1.17
<b>BUILDING TYPE SPECIFIC SPACE TYPES<sup>a</sup></b>	<b>LPD (watts/ft<sup>2</sup>)</b>
Automotive (see Vehicular maintenance area)	
Convention Center—exhibit space	0.50
Facility for the visually impaired <sup>b</sup>	
In a chapel (and not used primarily by the staff)	0.58
In a recreation room (and not used primarily by the staff)	1.20
Gaming establishments	
High limits game	1.68

<b>COMMON SPACE TYPES</b>	<b>LPD (watts/ft<sup>2</sup>)</b>
Slots	0.54
Sportsbook	0.82
Table games	1.09
Gymnasium/fitness center	
In an exercise area	0.82
In a playing area	0.82
Healthcare facility	
In an exam/treatment room	1.33
In an imaging room	0.94
In a medical supply room	0.56
In a nursery	0.87
In a nurse's station	1.07
In an operating room	2.26
<u>In a patient room</u>	<u>0.78</u>
In a physical therapy room	0.82
In a recovery room	1.18
In a telemedicine room	1.44
Library	
In a reading area	0.86
In the stacks	1.18
Manufacturing facility	
In a detailed manufacturing area	0.75
In an equipment room	0.73
In an extra-high-bay area (greater than 50 feet floor-to-ceiling height)	1.36
In a high-bay area (25–50 feet floor-to-ceiling height)	1.24
In a low-bay area (less than 25 feet floor-to-ceiling height)	0.86
Museum	
In a general exhibition area	0.31
In a restoration room	1.24

<b>COMMON SPACE TYPES</b>	<b>LPD (watts/ft<sup>2</sup>)</b>
Performing arts theater—dressing room	0.39
Post office—sorting area	0.71
Religious buildings	
In a fellowship hall	0.50
In a worship/pulpit/choir area	0.75
Retail facilities	
In a dressing/fitting room	0.45
Hair salon	0.65
Nail salon	0.75
In a mall concourse	0.57
Massage space	0.81
Sports arena—playing area	
For a Class I facility <sup>c</sup>	2.86
For a Class II facility <sup>d</sup>	1.98
For a Class III facility <sup>e</sup>	1.29
For a Class IV facility <sup>f</sup>	0.86
Sports arena-Pools	
For a Class I facility	2.20
For a Class II facility	1.47
For a Class III facility	0.99
For a Class IV facility	0.59
Transportation facility	
Airport hanger	1.36
At a terminal ticket counter	0.40
In a baggage/carousel area	0.28
Passenger loading area	0.71
In an airport concourse	0.49
Warehouse—storage area	
For medium to bulky, palletized items	0.33



COMMON SPACE TYPES	LPD (watts/ft <sup>2</sup> )
For smaller, hand-carried items	0.69

For SI: 1 foot = 304.8 mm, 1 watt per square foot = 10.76 watts per square meter.

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.	Class I facilities consist of professional facilities; and semiprofessional, collegiate, or club facilities with seating for 5,000 or more spectators.
d.	Class II facilities consist of collegiate and semiprofessional facilities with seating for fewer than 5,000 spectators; club facilities with seating for between 2,000 and 5,000 spectators; and amateur league and high school facilities with seating for more than 2,000 spectators.
e.	Class III facilities consist of club, amateur league and high school facilities with seating for 2,000 or fewer spectators.
f.	Class IV facilities consist of elementary school and recreational facilities; and amateur league and high school facilities without provision for spectators.

**Reason:**

The patient room space type was reinstated to the wrong location in the table. This change puts it where it belongs.

**Cost Impact:**

The code change proposal will neither increase nor decrease the cost of construction.

Editorial

# C405.1.1C405.3.3 Lighting power for sleeping units and dwelling units edited (1808)

IECC CE: C405.3.3

## Proponents:

Greg Johnson, representing National Multifamily Housing Council (gjohnsonconsulting@gmail.com)

## 2024 International Energy Code[CE Project] R3

## Revise as follows:

# C405.3.3 Lighting power for sleeping units and dwelling units.

Sleeping units in Group I-2 occupancies that are patient rooms shall comply with Sections C405.3.1 and C405.3.2. For all other sleeping units and dwelling units, permanently installed lighting 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 other appliances.
2.	Antimicrobial lighting used for the sole purpose of disinfecting.
3.	Luminaires with an input rating of less than 3W.

## Reason:

Editorial

## Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Editorial.

# Section C406.2.2.3 H03 corrections to variables (1633)

IECC CE: C406.2.2.3

## Proponents:

Emily Lorenz, representing International Institute of Building Enclosure Consultants (emilyblorenz@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

# C406.2.2.3 H03 More efficient HVAC cooling equipment and fan performance.

No less than 90 percent of the total HVAC cooling capacity serving the total *conditioned floor area* of the entire *building* or tenant space in accordance with Section C406.1.1, shall comply with all of the requirements of this section.

1.	Equipment installed shall be types that are listed in Tables referenced by Section C403.3.2.
2.	Equipment shall exceed the minimum cooling efficiency requirements listed in Tables referenced by Section C403.3.2 by at least 5 percent. For water-cooled chiller plants, heat rejection equipment performance in Table C403.3.2(7) shall also be increased by at least the chiller efficiency improvement. Where equipment exceeds the minimum annual cooling efficiency and heat rejection efficiency requirements by more than 5 percent, energy efficiency credits for cooling shall be determined using Equation 4-16, rounded to the nearest whole number.

Where fan energy is not included in packaged equipment rating or it is and the fan size has been increased from the as-rated equipment condition, fanpower or horsepower shall be less than 95 percent of the allowed fan power in Section C403.8.1.

$$EEC_{HEC} = EEC_5 \times (CEI/0.05)$$

(Equation 4-16)

$EEC_{HEC}$  = energy efficiency credits for cooling efficiency improvement

$EEC_5$  = C406.2.2.3 credits from Tables C406.2(1) through C406.2(9)

$CEI$  = the lesser of: the improvement above minimum cooling efficiency and heat rejection performance requirements expressed as a fraction, or 0.20 (20percent). Where cooling equipment with different minimum efficiencies are included in the *building*, a cooling capacity weighted average improvement shall be used. Where multiple cooling efficiency or performance requirements are provided, the equipment shall exceed the annualized energy or part-load requirement. Meeting both part-load and full-load efficiencies is not required. For metrics that increase as efficiency increases,  $CEI$  shall be calculated as follows:

$CEI = (CM_{DES}/CM_{MIN}) - 1$  For metrics that decrease as efficiency increases,  $CEI$  shall be calculated as follows:

$CEI = (CM_{MIN}/CM_{DES}) - 1$

Where:

$CM_{DES}$  = Design cooling efficiency metric, part-load or annualized where available

$CM_{MIN}$  = Minimum required cooling efficiency metric, part-load or annualized where available from Section C403.3.2

For Data Centers using ASHRAE Standard 90.4,  $CEI$  shall be calculated as follows:

$CEI = (AMLC_{MAX} / AMLC_{DES}) - 1$

Where:

$AMLC_{DES}$  = As-Designed Annualized Mechanical Load Component calculated in accordance with ASHRAE Standard 90.4, Section 6.5

$AMLC_{MAX}$  = Maximum Annualized Mechanical Load Component from ASHRAE Standard 90.4, Table 6.5

## Reason:

The inserted text corrects an error in the definition of the variables. It is not intended to make new changes of the text, but instead inserts

missing text from the original proposal (CEPI-193-21). The original proposal did reference the wrong row in the credits table (C406.2.2.2) where it should have been C406.2.2.3.

**Cost Impact:**

The code change proposal will neither increase nor decrease the cost of construction.

Editorial changes that will not affect cost assuming that credit is already being included.

# C406.2.3.2 W04: Service Hot Water Piping Insulation Increase edit (1815)

IECC CE: C406.2.3.2

## Proponents:

Greg Johnson, representing National Multifamily Housing Council (gjohnsonconsulting@gmail.com)

## 2024 International Energy Code[CE Project] R3

## Revise as follows:

# C406.2.3.2 W04: Service Hot Water Piping Insulation Increase.

Where service hot water is provided by a central water heating system, the hot water pipe insulation thickness shall be not less than 1.5 times the thickness required in Section C404.4. All service hot water piping shall be insulated from the hotwater source to the fixture shutoff. Where ~~no more than~~ 50 percent or more of hot water piping does not have increased insulation due to installation in partitions, the credit shall be prorated as a percentage of lineal feet of piping with increased insulation.

## Reason:

1. Preferable code language. 2. Better states intent?

## Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Mainly editorial.

# C408.3 (1710)

IECC CE: C408.3

## Proponents:

Daniel Carroll, representing Department of State (daniel.carroll@dos.ny.gov); Hendrik Shank, representing NYS Dept. of State (hendrikus.shank@dos.ny.gov)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

# C408.3 Functional testing of lighting controls.

*Automatic* lighting and receptacle controls required by this code shall comply with this section.

### Reason:

The title of the section only references lighting controls and this section now references lighting and receptacle controls.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Editorial

# Lighting Alterations Exception (1885)

IECC CE: C503.5.1

## Proponents:

Michael Jouaneh, representing Lutron Electronics Co., Inc. (mjouaneh@lutron.com)

## 2024 International Energy Code[CE Project] R3

## Revise as follows:

### C503.5.1 Interior lighting and controls.

Alterations to interior spaces, lighting, or controls shall comply with the following:

1.	Where the area of interior spaces is altered, those spaces shall comply with the lighting power requirements of Section C405.3 and those spaces shall comply with the lighting control requirements of Sections C405.2 and C408.3.
2.	Where the lighting within interior spaces is altered, those spaces shall comply with the lighting power requirements of C405.3 and those spaces shall comply with the lighting control requirements of C405.2 and C408.3.
3.	Where the lighting controls within interior spaces are altered, those spaces shall comply with the lighting control requirements of Sections C405.2 and C408.3.

**Exception:** Compliance with Section C405.2.9~~8~~ is not required for alterations.

## Reason:

The intent was to exempt demand responsive lighting C405.2.8 from being required for lighting alterations, not exempt the C405.2.9 interior parking area controls from being required for lighting alterations.

## Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Editorial fix.

# Errata for TABLE C407.4.1(1) (1636)

IECC CE: TABLE C407.4.1(1)

## Proponents:

Emily Lorenz, representing International Institute of Building Enclosure Consultants (emilyblorenz@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

TABLE C407.4.1(1) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Portions of table not shown remain unchanged.

BUILDING COMPONENT CHARACTERISTICS	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Walls, above-grade	Type: same as proposed	As proposed
	Gross area: same as proposed	As proposed
	<i>U</i> -factor: as specified in Table C402.1.2	As proposed
	<i>Thermal bridges</i> : Account for heat transfer consistent with compliant <i>psi</i> - and <i>chi</i> -factors from Table C402.1.4 for <i>thermal bridges</i> as identified in Section C402.7 that are present in the proposed design.	As proposed; <i>psi</i> - and <i>chi</i> -factors for proposed <i>thermal bridges</i> shall be determined in accordance with requirements in Section C402.1.4.
	Solar <del>reflectance: 0.25</del> absorptance: 0.75	As proposed

### Reason:

This proposal corrects a change that was approved in CED1-197-22.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

Editorial change only from last version.



# Errata to C303.1.3 (1640)

IECC CE: C303.1.3

## Proponents:

Emily Lorenz, representing International Institute of Building Enclosure Consultants (emilyblorenz@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C303.1.3 Fenestration product rating.

*U*-factors, *solar heat gain coefficient* (SHGC), and *visible transmittance* (VT) of *fenestration* products shall be determined as follows:

1.	For windows, doors and skylights, <i>U</i> -factor, SHGC and VT ratings shall be determined in accordance with NFRC 100 and NFRC 200. For the Total Building Performance option in Section C407, the <i>U</i> -factor, SHGC, and VT modeled in the <i>proposed design</i> shall be based on either the proposed project specific size(s) and configuration(s) for all <i>fenestration</i> products representing 5 percent or more of the total <i>fenestration</i> area, or the NFRC 100 standard sizes and configurations for all <i>fenestration</i> . Physical testing of <i>fenestration</i> at the project size and configuration to verify <i>U</i> -factor is not required..
2.	Where required for garage doors and rolling doors, <i>U</i> -factor ratings shall be determined in accordance with either NFRC 100 or ANSI/DASMA 105.

*U*-factors, SHGC, and VT shall be determined by an accredited, independent laboratory, and *labeled* and certified by the manufacturer by a label affixed to the product or a label certificate specific to the products in the project.

### Reason:

This proposal inserts text that was approved as part of CED1-90-22.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

this proposal is editorial.

# Errata/editorial corrections to C406.3.4 (1634)

IECC CE: C406.3.4

## Proponents:

Emily Lorenz, representing International Institute of Building Enclosure Consultants (emilyblorenz@gmail.com); Greg Johnson, representing National Multifamily Housing Council (gjohnsonconsulting@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C406.3.4 G03 Automated Shading Load Management.

Where *fenestration* on east, south, and west exposures ~~exceeds~~ is greater than 20 percent of wall area, load management credits shall be achieved as follows:

1.	<i>Automatic</i> exterior shading devices or <i>dynamic glazing</i> that are capable of reducing solar gain (SHGC) through sunlit <i>fenestration</i> by <del>at least</del> <u>not less than</u> 50 percent when fully closed shall receive the full credits in Tables C406.3(1) through C406.3(9). The exterior shades shall have fully open and fully closed SHGC determined in accordance with AERC 1.						
2.	<i>Automatic</i> interior shading devices with a <del>minimum</del> solar reflectance of <u>not less than</u> 0.50 for the surface facing the <i>fenestration</i> shall receive 40 percent of the credits in Tables C406.3(1) through C406.3(9).						
3.	All shading devices, <i>dynamic glazing</i> , or shading attachments shall: <table border="1"><tr><td>3.1</td><td>Provide <del>at least</del> <u>not less than</u> 90 percent coverage of the total <i>fenestration</i> on east, south, and west exposures in the <i>building</i> to achieve the credits determined in items 1 or 2. Alternatively, provide <del>at least</del> <u>not less than</u> 70 percent coverage of the total <i>fenestration</i> on the south and west exposures in the <i>building</i> to achieve 50 percent of the credits determined in items 1 or 2.</td></tr><tr><td>3.2</td><td>Be automatically controlled and shall modulate in multiple steps or continuously the amount of solar gain and light transmitted into the space in response to peak periods and either daylight levels or solar intensity.</td></tr><tr><td>3.3</td><td>Include a <i>manual</i> override located in the same <i>enclosed space</i> as the shaded vertical <i>fenestration</i> that shall override operation of <i>automatic</i> controls <u>for</u> no longer than four hours. Such override shall be locked out during peak periods.</td></tr></table>	3.1	Provide <del>at least</del> <u>not less than</u> 90 percent coverage of the total <i>fenestration</i> on east, south, and west exposures in the <i>building</i> to achieve the credits determined in items 1 or 2. Alternatively, provide <del>at least</del> <u>not less than</u> 70 percent coverage of the total <i>fenestration</i> on the south and west exposures in the <i>building</i> to achieve 50 percent of the credits determined in items 1 or 2.	3.2	Be automatically controlled and shall modulate in multiple steps or continuously the amount of solar gain and light transmitted into the space in response to peak periods and either daylight levels or solar intensity.	3.3	Include a <i>manual</i> override located in the same <i>enclosed space</i> as the shaded vertical <i>fenestration</i> that shall override operation of <i>automatic</i> controls <u>for</u> no longer than four hours. Such override shall be locked out during peak periods.
3.1	Provide <del>at least</del> <u>not less than</u> 90 percent coverage of the total <i>fenestration</i> on east, south, and west exposures in the <i>building</i> to achieve the credits determined in items 1 or 2. Alternatively, provide <del>at least</del> <u>not less than</u> 70 percent coverage of the total <i>fenestration</i> on the south and west exposures in the <i>building</i> to achieve 50 percent of the credits determined in items 1 or 2.						
3.2	Be automatically controlled and shall modulate in multiple steps or continuously the amount of solar gain and light transmitted into the space in response to peak periods and either daylight levels or solar intensity.						
3.3	Include a <i>manual</i> override located in the same <i>enclosed space</i> as the shaded vertical <i>fenestration</i> that shall override operation of <i>automatic</i> controls <u>for</u> no longer than four hours. Such override shall be locked out during peak periods.						

For this section, directional exposures shall exclude *fenestration* that has an orientation deviating by more than 45 degrees of facing the cardinal direction . In the southern hemisphere, where the south exposure is referred to, it shall be replaced by the north exposure .

### Reason:

The changes included in this proposal were approved as modified in CED1-141-22. This proposal was approved by the Envelope subcommittee on January 5, 2023, and by the main committee on January 25, 2023.

### Cost Impact:

The code change proposal will neither increase nor decrease the cost of construction.

These are editorial changes only.

# Errata/editorial for Section C402.1 (1642)

IECC CE: C402.1, C402.1.1.2

## Proponents:

Emily Lorenz, representing International Institute of Building Enclosure Consultants (emilyblorenz@gmail.com)

## 2024 International Energy Code[CE Project] R3

### Revise as follows:

## C402.1 General.

*Building thermal envelope* assemblies for buildings that are intended to comply with the code on a prescriptive basis in accordance with the compliance path described in Item 1 of Section C401.2.1 shall comply with the following:

1.	The opaque portions of the <i>building thermal envelope</i> shall comply with the specific insulation requirements of Section C402.2 and the thermal requirements of either Section C402.1.2; <u>Section C402.1.3</u> ; or Section C402.1.4. Where the total area of through penetrations of mechanical equipment is greater than 1 percent of the opaque <i>above-grade wall</i> area, the <i>building thermal envelope</i> shall comply with Section C402.1.2.4.
2.	Wall solar reflectance and thermal <i>emittance</i> shall comply with Section C402.3.
3.	Roof solar reflectance and thermal <i>emittance</i> shall comply with Section C402.4.
4.	<i>Fenestration</i> in <i>building thermal envelope assemblies</i> shall comply with Section C402.5. Where buildings have a vertical <i>fenestration</i> area or skylight area greater than <u>that</u> allowed in Section C402.5, the <i>building</i> and <i>building thermal envelope</i> shall comply with Item 2 of Section C401.2.1, Section C401.2.2, or Section C402.1.4.
5.	<i>Air leakage</i> of the <i>building thermal envelope</i> shall comply with <u>Section C402.6</u> .
6.	Thermal bridges in above-grade walls shall comply with Section C402.7.
7.	<i>Walk-in coolers, walk-in freezers, refrigerated warehouse coolers and refrigerated warehouse freezers</i> shall comply with Section C403.12.

## C402.1.1.2 Greenhouses.

Greenhouse structures or areas that are mechanically heated or cooled and that comply with all of the following shall be exempt from the *building thermal envelope* requirements of this code:

1.	Exterior opaque envelope assemblies comply with Sections C402.2 and C402.5.5. <b>Exception:</b> Low energy greenhouses that comply with Section C402.1.1.
2.	Interior partition <i>building thermal envelope</i> assemblies that separate the greenhouse from <i>conditioned space</i> comply with Sections C402.2, C402.5.3 and C402.5.5.

3.	<p><i>Fenestration</i> assemblies that comply with the <i>building thermal envelope</i> requirements in Table C402.1.1.2. The <i>U</i>-factor for a roof shall be for the <i>roof assembly</i> or a roof that includes the assembly and an <i>internal curtain system</i>.</p> <p><b>Exception:</b> Unconditioned greenhouses.</p>
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**Reason:**

These changes are editorial in nature were approved as part of CED1-92, 94, and 95.

**Cost Impact:**

The code change proposal will neither increase nor decrease the cost of construction.

These changes are editorial and will not change costs.