



## International Energy Conservation Code Consensus Committee-Commercial

### Meeting Agenda (Draft 3/21/23)

March 22, 2023

2:00 PM Eastern to 5:00 PM Eastern (3 hours)

[Webex Link](#)

**Committee Chair:** Duane Jonlin

**Committee Vice Chair:** Emily Hoffman

1. Call to order.
2. Meeting Conduct. Staff
  - a. Identification of Representation/Conflict of Interest
  - b. ICC [Council Policy 7](#) Committees: Section 5.1.10 Representation of Interests
  - c. ICC [Code of Ethics](#): ICC advocates commitment to a standard of professional behavior that exemplifies the highest ideals and principles of ethical conduct which include integrity, honesty, and fairness. As part of this commitment it is expected that participants shall act with courtesy, competence and respect for others.
  - d. ICC [Antitrust Compliance Guideline](#)
3. Roll Call – Hoffman
4. Approval of Agenda
5. Approval of Minutes from March 8, 2023
6. Administrative issues.
7. Action Items.
  - a. Public Comment Draft 1 Proposals

#### New proposals

CEPC1-19-22(Biomass definition)	
CEPC1-14-22(Fuel neutral comment)	
CEPC1-13-22(City of Minneapolis comment)	
CECD1-10-22(Comm. biomass prop)	Admin as modified 9-0-1/Elec disapprove 10-2-1
CED1-22-22(Biomass definition)	Admin as modified 8-1-2
CED1-23-22(Redefine biomass)	Admin approve 6-3-2
CED1-19-22(biomass definition)	Admin disapprove 5-4-2
CED1-181-22(biomass definition)	Admin disapprove 8-0-1
CED1-25-22(Renewable biomass)	Admin disapprove 8-0-2
CED1-18-22(Renewable fuel definition)	Admin disapprove 8-3-1
CED1-20-22(Redefine renewable energy resources)	Admin approve 5-4-2

CED1-24-22(Renewable hydrocarbon sources)	Admin disapprove 8-0-2
CED1-121-22(Wall SRI)	Envelope as modified 16-0-1
CED1-150-22(AISI reference)	Envelope approve 16-0
CED1-117-22(Building envelope backstop)	Envelope disapprove 9-8-1
CED1-142-22(Fenestration backstop)	Envelope disapprove 14-3-1
CED1-196-22(Envelope performance backstop)	Envelope disapprove 13-1-2
CED1-197-22(Solar absorptance)	Envelope approve 10-0-4
CECD1-3-22(L03 Occupant sensor)	Electrical approve 13-0-0
CECD1-4-22(L02 High-end trim lighting controls)	Electrical approve 11-0-2
CECD1-5-22(G01 Demand response lighting controls)	Electrical approve 13-0-0
CECD1-16-22(L05 Residential light control)	Electrical approve 15-0-1
CED1-61-22(Electric storage ready)	Electrical disapprove 6-5-1
CED1-62-22(Battery storage equation)	Electrical as modified 9-1-0
CED1-17-22(Electric energy system)	Electrical disapprove 10-0-2
	-
CED1-58-22(Energy storage system exception)	Electrical disapprove 6-4-1
CED1-59-22(Energy storage system to appendix)	Electrical disapprove 6-5-2
CED1-60-22(Battery storage updated)	Electrical disapprove 7-5
CED1-63-22(ESS Ready spacing requirements)	Electrical disapprove 12-0
CED1-64-22(Additional electric infrastructure)	Electrical disapprove 12-0
CED1-148-22(Curb heights)	HVACR approve 8-3-1/Env as modified 14-0-2
CED1-170-22(Demand response water heater exception)	HVACR disapproved 5-1-4
CECD1-14-22(On-site renewables modification)	HVACR approve 10-0-1

## 8. Subcommittee Reports

## 9. Other business.

- a. Public comment on any matters discussed at the meeting (Please limit comments to 2 minutes. Further comments can be directed to the Secretariat following the meeting to be considered at a future meeting.)

10. Next meeting Wednesday, April 5, 2023 at 3:30 pm Eastern

11. Adjourn.

FOR FURTHER INFORMATION BE SURE TO VISIT THE ICC WEBSITE:

IECC Commercial Consensus Committee Webpage

<https://www.iccsafe.org/products-and-services/i-codes/code-development/cs/iecc-commercial-consensus-committee/>

ICC Energy webpage

<https://www.iccsafe.org/products-and-services/codes-standards/energy/>

Code Change Proposal Submittals

<https://energy.cdpass.com/login/>

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

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International Code Council

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## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-10-22 Admin Biomass Committee proposal
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	Base
Proponent	Admin subcommittee
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	<p>From Admin. SC Reason Statement: The proposal ensures consistency with current US policy for what constitutes “biomass.”</p> <p>From EPLR SC Reason statement: This proposal represents a move away from decarbonization. The proposed definition of biomass includes several additional examples of biomass waste, when there is already a definition of biomass waste. The proposed biomass definition might include combustion of virgin forests as biomass. In proposed Section C405.2.2, there is concern about the ability for the code official to verify documentation for delivered fuels, and how to verify compliance with IECC by a single bill of lading, compared to a 10 or 15 year contract for other forms of renewable energy. In Table C405.15.1(2) renewable natural gas or renewable biodiesel and diesel could be unverifiable and unenforceable when delivered through the same gas piping system as natural gas, or the same truck delivery system as non-renewable delivered fuels.</p>
Vote	Admin Approved as modified 9-0-1 /EPRR SC disapprove 10-2-1
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <b>X</b> _____
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

## Add new definitions as follows:

**BIOMASS.** Nonfossilized and biodegradable organic material originating from plants, animals and/or microorganisms, including products, byproducts, residues and waste from agriculture, forestry and related industries as well as the nonfossilized and biodegradable organic fractions of industrial and municipal wastes, including gases and liquids recovered from the decomposition of nonfossilized and biodegradable organic material.

**BIOMASS WASTE.** Organic non-fossil material of biological origin that is a byproduct or a discarded product. Biomass waste includes municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural crop byproducts, straw, and ~~other biomass solids, liquids, and biogases~~ wood waste and wood residuals harvested at the building site. ~~but excludes wood and wood derived fuels (including black liquor), biofuel feedstock, biodiesel, and fuel ethanol.~~

**DELIVERED LOW CARBON FUELS.** Fuels delivered to the building site where the sum of the greenhouse gases emitted throughout the production and use life cycle of the fuel, expressed on a per-unit-of-fuel-energy basis, is reduced compared to a fossil fuel equivalent.

**RENEWABLE ENERGY RESOURCES.** Energy derived from solar radiation, wind, waves, tides, biomass, *biomass waste* or extracted from hot fluid or steam heated within the earth.

## Revise section C405.15 as follows:

**C405.15 Renewable energy systems** *Buildings* in Climate Zones 0-7 shall comply with C405.15.1 through C405.15.4

**C405.15.1 On-site renewable energy systems** *Buildings* shall install equipment for on-site renewable electricity generation with a direct current (DC) nameplate power rating of not less than 0.75 W/ft<sup>2</sup> (8.1 W/m<sup>2</sup>) multiplied by the sum of the gross conditioned floor area of all floors not to exceed the combined gross conditioned floor area of the three largest floors.

**Exceptions:** The following buildings or building sites shall comply with Section C405.15.2:

1. A building site located where an unshaded flat plate collector oriented toward the equator and tilted at an angle from horizontal equal to the latitude receives an annual daily average incident solar radiation less than 1.1 kBtu/ft<sup>2</sup> - day (3.5 kWh/m<sup>2</sup> - day).
2. A *building* where more than 80 percent of the roof area is covered by any combination of permanent obstructions such as, but not limited to, mechanical equipment, vegetated space, access, pathways, or occupied roof terrace.
3. Any building where more than 50 percent of the roof area is shaded from direct-beam sunlight by natural objects or by structures that are not part of the building for more than 2500 annual hours between 8:00 a.m. and 4:00 p.m.
4. A *building* with gross conditioned floor area less than 5,000 square feet (465 m<sup>2</sup>).

**C405.15.2 Off-site renewable energy and delivered low carbon fuels.** *Buildings* that qualify for one or more of the exceptions to Section 405.15.1 and do not meet the requirements of Section 405.15.1 either in part or in full, with an on-site renewable energy system, shall comply with this section. Buildings shall procure off-site renewable electrical energy in accordance with C405.15.2.1 and C405.15.2.2, or shall procure delivered low carbon fuels in accordance with C405.15.2.2, that shall ~~be~~ not be less than the total off-site renewable ~~electrical~~ energy determined in accordance with Equation 4-14.

$$\text{TREoff} = ((\text{RENoff} \times 0.75 \text{ W/ft}^2 \times \text{FLRA} - \text{IREon}) \times 15) / \text{CIred}$$

TREoff = Total off-site renewable **electrical** energy **in kilowatt-hours (kWh)** to be procured in accordance with Table C405.15.2 (**Equation 4-14**)

RENoff = Annual off-site renewable **electrical** energy from Table C405.15.2, **in units of kilowatt-hours per watt of array capacity**

FLRA = the sum of the gross conditioned floor area of all floors not to exceed the combined floor area of the three largest floors

IREon = Annual on-site renewable **electrical** energy generation of a new on-site renewable energy system, to be installed as part of the building project, whose rated capacity is less than the rated capacity required in Section C405.15.1

CIred = Percent reduction in carbon intensity in accordance with Table CC405.15.3 where CI is calculated in accordance with the U.S. Environmental Protection Agency Renewable Fuel Standard or the California Low Carbon Fuel Standard.

### TABLE C405.15.2

#### Annual Off-site Renewable Energy Requirement

Climate Zone Annual Off-site Renewable **Electrical** Energy (kWh/W)

1A, 2B, 3B, 3C, 4B, and 5B 1.75 kWh/W

0A, 0B, 1B, 2A, 3A, and 6B 1.55 kWh/W

4A, 4C, 5A, 5C, 6A, and 7 1.35 kWh/W

### TABLE C405.15.3

#### CARBON INTENSITY REDUCTION FACTORS

<u>Energy Resource</u>	<u>CIred</u>
<u>Solar, Wind, Waves, Tides, Geothermal</u>	1.0
<u>Renewable Propane or Dimethyl Ether per ASTM D7901</u>	<u>1-CI/81.9</u>
<u>Renewable Natural Gas</u>	<u>1- CI/84.2</u>
<u>Renewable Biodiesel or Renewable Diesel<sup>a</sup></u>	0.7
<u>Other Energy Resource with Reduced Carbon Intensity</u>	<i>To be approved</i>

- a. A biomass based diesel fuel with a Renewable Identification Number under the U.S. Environmental Protection Agency Renewable Fuel Standard at the time of production in accordance with ASTM D975 or ASTM D6751.

**C405.15.2.1 Off-site procurement** The building owner as defined in the *International Building Code* shall procure and be credited for the total amount of off-site renewable electrical energy, not less than required in accordance with Equation 4-14, with one or

more of the following:

1. A *physical renewable energy power purchase agreement*
2. A *financial renewable energy power purchase agreement*
3. A *community renewable energy facility*
4. Off-site renewable energy system owned by the building property owner

**C405.15.2.2 Off-site contract and documentation.** The *renewable energy* shall be delivered or credited to the building site under an energy contract with a duration of not less than 10 years. The contract shall be structured to survive a partial or full transfer of ownership of the building property. The total required off-site renewable ~~electrical~~ energy shall be procured in equal installments over the duration of the off-site contract. *Delivered low carbon fuels shall document by a bill of lading either the carbon intensity of the delivered fuel or the B99, B100, R99 or R100 blend level in accordance with the U.S Environmental Protection Agency renewable fuel standard.*

**C405.15.3 Renewable energy certificate documentation.** The property owner or owner's authorized agent shall demonstrate that where RECs or EACs are associated with on-site and off-site renewable energy production required by Sections C405.15.1 and C405.15.2 all of the following criteria for RECs and EACs shall be met:

1. Are retained and retired by or on behalf of the property owner or tenant for a period of not less than 15 years or the duration of the contract in C405.15.2 whichever is less;
2. Are created within a 12-month period of the use of the REC; and
3. Are from a generating asset constructed no more than 5 years before the issuance of the certificate of occupancy.

**C405.15.4 Renewable energy certificate purchase.** A *building* that qualifies for one or more of the exceptions to Section C405.15.1 and where it can be demonstrated to the *code official* that the requirements of Section C405.15.2 cannot be met, the building owner shall contract for renewable electricity products complying with the Green-e Energy National Standard for Renewable Electricity products equivalent to five times the amount of total offsite renewable energy calculated in accordance with Equation 4-14.

## SECTION C406

### ADDITIONAL EFFICIENCY, RENEWABLE, AND LOAD MANAGEMENT REQUIREMENTS

**C406.3.1 R01 Renewable Energy.** Projects installing *on-site renewable energy* systems with a capacity of at least 0.1 watts per gross square foot (1.08W/m<sup>2</sup>) of building area or securing offsite renewable energy shall achieve energy credits for this measure calculated as follows:

ECR= C406.3.1 R01 energy credits achieved for this project (Equation 4-28)

Rt= Actual total rating of *on-site renewable energy* systems (W)

PGFA = Project gross floor area, ft<sup>2</sup>

EC0.1= C406.3.1 R01 base credits from Tables C406.3(1) through C406.3(9)

ROFF= Actual total equivalent rating of off-site renewable energy contracts (W), calculated as follows:

ROFF= TRE/(REN X 20)

where:

TRE = Total off-site renewable ~~electrical~~ energy in kilowatt-hours (kWh) that is procured in accordance with Sections C405.13.2.1 through C405.13.4

REN = Annual off-site renewable ~~electrical~~ energy from Table C405.13.2, in units of kilowatt hours per watt of array capacity  
Rex= Rating (W) of renewable energy resources capacity excluded from credit calculated as follows:

Rex= RRR+ RRx+ RRC where: RRR= Rating of on-site renewable energy systems required by Section C405.13.1, without exception (W).

RRx= Rating of renewable energy resources used to meet any exceptions of this code (W).

RRC= Rating of renewable energy resources used to achieve other energy credits in Section C406 (W).

Where renewable requirements, exceptions, or credits are expressed in annual kWh or Btu rather than Watts of output capacity, they shall be converted as 3413 Btu = 1 kWh and converted to W equivalent capacity as follows:

RRw= Actual total equivalent rating of renewable energy capacity (W), calculated as follows:

$$RRw = TREx / (REN \times PGFA)$$

where:

TREx= Total renewable energy in kilowatt-hours (kWh) that is excluded from R01 energy credits

## SECTION C502

### ADDITIONS

Revise as follows:

#### C502.3.7 Renewable energy systems.

Additions shall comply with Section C405.1315 for the addition alone.

*Add Reference Standards as Follows:*

<b>ASTM</b>	ASTM International 100 Barr Harbor Drive, P.O Box C700 West Conshohocken, PA 19428-2959
<a href="#">D7901-20</a>	<a href="#">Standard Specification for Dimethyl Ether for Fuel Purposes</a>
<a href="#">D975-22</a>	<a href="#">Standard Specification for Diesel Fuel</a>
<a href="#">D6751-20a</a>	<a href="#">Standard Specification for Biodiesel Fuel Blend Stock (B100) for Middle Distillate Fuels</a>
<b>U.S. Environmental</b>	<a href="#">USEPA William Jefferson Clinton Building North (WJC North)</a> <a href="#">1200 Pennsylvania Avenue N.W.</a>



<b>Protection Agency</b>	<a href="#">Washington, DC 20004</a>
<a href="#">40 CFR Part 80 - 2023</a>	<a href="#">Renewable Fuel Standard</a>
<b>California Air Resources Board</b>	<a href="#">California Air Resources Board</a> <a href="#">4001 Iowa Ave</a> <a href="#">Riverside, CA 92507</a>
<a href="#">LCFS 22-02</a>	<a href="#">Low Carbon Fuel Standard</a>

**Reason Statement:** This committee consensus proposal consolidates the action on CED1-18, 19, 20, 22, 23, 24, 25, and 181 with a recommended set of new and revised definitions and revised language in the main body of the code to correlate with the definitions. See the reason statement on CED1-18.



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-022-22 Biomass definition
CDP ID #	853
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Bruce Swiecicki bswiecicki@npga.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	The action on this proposal has been superseded by the action on the committee consensus proposal.
Recommendation	Reason Statement: This proposal changes the definition to ensure properly administered renewable hydrocarbon sources can be a valuable tool in reducing emissions.
Vote	Approved as Modified 8-1-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

**International Energy Conservation Code**

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## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-023-22 Redefine biomass
CDP ID #	858
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Robert Obrien robrien@noraweb.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	The action on this proposal has been superseded by the action on the committee consensus proposal.
Recommendation	Reason Statement: The proposal ensures consistency with current US policy for what constitutes "biomass."
Vote	Approved as Submitted 6-3-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-019-22 Biomass definition
CDP ID #	827
Code	IECC CE
Code Section(s)	C202
Location	Base
Proponent	Jeff Bradley <a href="mailto:jbradley@awc.org">jbradley@awc.org</a>
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	Reason Statement: The proposal does not include enforceable provisions to ensure that virgin wood is not included in wood residuals.
Vote	Disapproved 5-4-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-181-22 Biomass definition
CDP ID #	687
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Steven Rosenstock srosenstock@eei.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	Reason Statement: Based on the action in CED1-23 at the request of the proponent.
Vote	Disapproved 8-0-1
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u> X </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-025-22 Renewable biomass
CDP ID #	913
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Bruce Swiecicki bswiecicki@npga.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	Reason Statement: Based on action on the other biomass-related proposals.
Vote	Disapproval 8-0-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-018-22 Renewable fuel definition
CDP ID #	689
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Diana Burk diana@newbuildings.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	Reason Statement: Concerns about use of CA and EU models for verification of GHG reduction. Need independent verification or certification component for submission to code official. Also concerns about 70% reduction (requirement) in a definition; should be in body of code."
Vote	Disapproved 8-3-1
Recommendation Date	January 3, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-020-22    Redefine renewable energy resources
CDP ID #	829
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Robert Obrien    robrien@noraweb.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	The action on this proposal has been superseded by the action on the committee consensus proposal.
Recommendation	Reason Statement: This proposal aligns the IECC-C with other energy codes.
Vote	Approved as Submitted 5-4-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	





## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-024-22 Renewable hydrocarbon sources
CDP ID #	912
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Bruce Swiecicki bswiecicki@npga.org
Proposal Status	SC review
Subcommittee	CE Admin
Subcommittee Notes	
Recommendation	Reason Statement: The proposal adds a definition that does not add value to the code.
Vote	Disapproved 8-0-2
Recommendation Date	January 31, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-121-22 Wall SRI
CDP ID #	709
Code	IECC CE
Code Section(s)	C402.3
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> In addition to the original reason statement, approval as modified is editorial corrections of existing language.
Recommendation	<p><b>Approve as modified</b></p> <p><b>Modification:</b></p> <p>Add new text as follows:</p> <p>101 New Code Section.</p> <p>north-oriented: facing within 67.5 degrees of true north in the northern hemisphere; <del>(however, or facing within 67.5 degrees of true south in the southern hemisphere.)</del></p> <p>south-oriented: facing within 45 degrees of true south in the northern hemisphere; <del>(however, or facing within 45 degrees of true north in the southern hemisphere.)</del></p> <p>east-oriented: facing within 45 degrees of true east to the south and within less than 22.5 degrees of true east to the north in the northern hemisphere; <del>(however, or facing within 45 degrees of true east to the north and within less than 22.5 degrees of true east to the south in the southern hemisphere.)</del></p> <p>west-oriented: facing within 45 degrees of true west to the south and within less than 22.5 degrees of true west to the north in the northern hemisphere; <del>(however, or facing within 45 degrees of true west to the north and within less than 22.5 degrees of true west to the south in the southern hemisphere.)</del></p>
Vote	<b>Approve as modified</b> 16-0-1 (CNV)

Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-150-22    AISI reference
CDP ID #	673
Code	IECC CE
Code Section(s)	Chapter 6
Location	base
Proponent	Jonathan Humble    Jhumble@steel.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> Agreed with the proponent's reason statement that this proposal corrected an error within the 2021 edition of the standard.
Recommendation	<b>Approve as submitted</b>
Vote	<b>Approve as submitted</b> 16-0-1 (CNV)
Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ <b>X</b> _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-117-22 Building envelope backstop
CDP ID #	830
Code	IECC CE
Code Section(s)	C402.1.4
Location	base
Proponent	Mike Waite mwaite@aceee.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> Reduces design flexibility, drives additional embodied energy, and does not save operational energy.
Recommendation	<b>Disapprove</b>
Vote	<b>Disapprove:</b> 9-8-1 (CNV)
Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-142-22 Fenestration backstop
CDP ID #	874
Code	IECC CE
Code Section(s)	C407.2
Location	base
Proponent	Helen Sanders helen.sanders@Technoform.com
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> Restricts design flexibility without any energy savings, as the proposed building is still required to show equivalent energy performance. Therefore, does not meet cost effectiveness if increases cost without any energy savings. Also, the selected percentage is arbitrary.
Recommendation	<b>Disapprove</b>
Vote	<b>Disapprove 14-3-1 (CNV)</b>
Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <input checked="" type="checkbox"/> X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-196-22 Envelope performance backstop
CDP ID #	864
Code	IECC CE
Code Section(s)	C407.2
Location	base
Proponent	Amy Boyce amy.boyce@imt.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> Reduces design flexibility, drives additional embodied energy, and does not save operational energy
Recommendation	<b>Disapprove</b>
Vote	<b>Disapprove 13-1-2 (CNV)</b>
Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-197-22 Roof reflectance in performance path
CDP ID #	
Code	IECC CE
Code Section(s)	TABLE C407.4.1(1)
Location	base
Proponent	Aaron Phillips aPhillips@asphaltroofing.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason:</b> correlate use of solar reflectance with other parts of the code.
Recommendation	<b>Approve as submitted</b>
Vote	<b>Approve as submitted</b> 10-0-4 (CNV)
Recommendation Date	3/2/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <input checked="" type="checkbox"/> _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	





## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-026-22 Sleeping unit and dwelling unit requirements
CDP ID #	840
Code	IECC CE
Code Section(s)	C405.1
Location	base
Proponent	Glenn Heinmiller glenn@lampartners.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: Provides clarity for efficiency and enforcement.
Recommendation	<p>APPROVE AS MODIFIED</p> <p><b>C405.1 General...</b>  <b>Exception:</b> <i>Dwelling units</i> and <i>sleeping units</i> that comply with <b>Section C405.2.10</b> and <b>Section C405.3.3</b> and <b>Section C405.6</b>.</p> <p><b>C405.2 Lighting controls.</b> 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 <u>10</u></p> <p><b>C405.3 Interior lighting power requirements.</b> 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. <u><i>Sleeping units</i> and <i>dwelling units</i> shall comply with C405.3.3.</u></p> <p><b>C405.3.3 Lighting power for sleeping units and dwelling units.</b> <del>No less than 90 percent of the <i>Sleeping units</i> in Group I-2 occupancies that are patient rooms shall comply with C405.3.1 and C405.3.2. For all other <i>sleeping units</i> and <i>dwelling units</i>, the permanently installed lighting serving <i>sleeping units</i> and <i>dwelling units</i>, including lighting integrated into range hoods and exhaust fans,</del> 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.</p> <p><b>Exceptions:</b></p> <ol style="list-style-type: none"> <li>1. Lighting integral to a kitchen appliance.</li> <li>2. Antimicrobial lighting used for the sole purpose of disinfecting.</li> <li>3. Luminaires with a rated electric input of not greater than 3.0 Watt.</li> </ol>
Vote	11 - 0 - 3

Recommendation Date	January 23, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-3-22 L03 Occupant sensor
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	base
Proponent	CE Electrical power, lighting, renewables subcommittee
Proposal Status	SC review
Subcommittee	CE Electrical power, Lighting, Renewables
Subcommittee Notes	
Recommendation	Reason: This will allow hotel lobbies to match the requirements of other lobbies, as the lighting requirements are similar.
Vote	Approve 13-0-0
Recommendation Date	12/19/22
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

# Occupant Sensor Controls

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. Conference/meeting/multipurpose rooms.
3. Copy/print rooms.
4. Lounges/breakrooms.
5. Enclosed offices.
6. Open plan office areas.
7. Restrooms.
8. Storage rooms.
9. Locker rooms.
10. Corridors.
11. Warehouse storage areas.
12. Computer room, data center.
13. Laundry/washing area.
14. Medical supply room in a healthcare facility.
15. Telemedicine room in a healthcare facility.
16. Laboratory.
17. Other spaces 300 square feet (28 m<sup>2</sup>) 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 laboratories and 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 laboratories and warehouse storage areas.**

Lighting in laboratories and 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.

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

**C406.2.5.3.2 Occupant sensor control function.** Occupant sensors in library stacks 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. 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.~~

**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 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: 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.



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-4-22 L02 High-end trim lighting controls
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	base
Proponent	CE Electrical power, lighting, renewables subcommittee
Proposal Status	SC review
Subcommittee	CE Electrical power, Lighting, Renewables
Subcommittee Notes	
Recommendation	Reason: This proposal reduces the cost of the measure while not reducing energy savings.
Vote	approve 11-0-2
Recommendation Date	12/19/22
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



# Demand Response Lighting Controls

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 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: lighting controls have a high-end trim setting and have undergone functional testing in accordance with Section C408.3.1.4.

1. The calibration adjustment equipment is located for *ready access* only by authorized personnel.
2. Lighting controls with *ready access* for users cannot increase the lighting power above the maximum level established by the *high-end trim* controls.

**C406.2.5.2 L02 ~~Enhanced digital lighting controls~~ *High-end trim* lighting controls.** Measure credits shall be achieved where qualifying spaces account for no less than 50 percent of the gross project floor area exclusive of *dwelling and sleeping units* within the project shall comply with the requirements of this section Qualifying spaces are those where *general lighting* is controlled by *high-end trim* lighting controls complying with the following:

1. The calibration adjustment equipment is located for *ready access* only by authorized personnel.
2. Lighting controls with *ready access* for users cannot increase the lighting power above the maximum level established by the *high-end trim* controls.
3. Construction documents shall state that maximum light output or power of *general lighting* in spaces contributing to the qualifying floor area shall be initially reduced by at least 15 percent from full output.
4. *High-end trim* lighting controls shall undergo functional testing in accordance with Section C408.3.1.5.

~~1. Lighting controls function. Interior general lighting shall be located, scheduled and operated in accordance with Section C405.2 and shall be configured with the following enhanced control functions:~~

- ~~1.1. Luminaires shall be configured for continuous dimming.~~
- ~~1.2. Each luminaire shall be individually addressed.~~

**Exceptions:**

~~1. Multiple luminaires mounted on no more than 12 linear feet (3.66 m) of a single lighting track and addressed as a single luminaire.~~

~~2. Multiple linear luminaires that are ganged together to create the appearance of a single longer fixture and addressed as a single luminaire, where the total length of the combined luminaires is not more than 12 feet (3.66 m).~~

~~1.3. No more than eight luminaires within a daylight zone are permitted to be controlled by a single daylight responsive control.~~

~~2. Luminaires shall be controlled by a digital control system configured with the following capabilities:~~

~~2.1. Scheduling and illumination levels of individual luminaires and groups of luminaires are capable of being reconfigured through the system.~~

~~2.2. Load shedding.~~

~~2.3. Occupancy sensors and daylight responsive controls are capable of being reconfigured through the system.~~

~~3. Construction documents shall include submittal of a Sequence of Operations, including a specification outlining each of the functions required by this section.~~

~~4. High-end trim. Luminaires shall be initially configured with the following:~~

~~4.1. High-end trim, setting the maximum light output of individual luminaires or groups of luminaires to support visual needs of a space or area, shall be implemented and construction documents shall state that maximum light output or power of controlled lighting shall be initially reduced by at least 15 percent from full output. The average maximum light output or power of the controlled lighting shall be documented without high-end trim and with high-end trim to verify reduction of light output or power by at least 15 percent when tuned.~~

~~4.2. Where lumen maintenance control is used, controls shall be configured to limit the initial maximum lumen output or maximum lighting power to 85 percent or less of full light output or full power draw and lumen maintenance controls shall be limited to increasing lighting power by 1 percent per year.~~

~~4.3. High-end trim and lumen maintenance controls shall be accessible only to authorized personnel.~~

~~Where general lighting in more than 50 percent of the gross lighted floor area receives high-end trim, The base credits from Tables C406.1.2(1) through C406.1.2(9) shall be prorated as follows:~~

~~[Tuned lighted floor area, %] HET × [Base energy credits for C406.2.5.2] / 50%~~

~~HET = Floor area of qualifying spaces where *general lighting* is provided with *high-end trim* lighting controls complying with the requirements of this section, expressed as a percentage of total interior floor area excluding *dwelling and sleeping units*.~~

**C408.3.1.4 High-end trim controls.** Where lighting controls are configured for *high-end trim* trims, verify the following:

1. ~~That~~ *High-end trim* maximum level has been set.
2. ~~That~~ The calibration adjustment equipment is located for *ready access* only by authorized personnel.
3. ~~That~~ Lighting controls with *ready access* for users cannot increase the lighting power above the maximum level established by the *high-end trim* controls.

**C408.3.1.5 High end trim lighting control verification for Additional Efficiency Credit L02.** For the qualifying spaces associated with the project receiving additional efficiency credits in Section C406.2.5.2, document the following while daylight responsive controls are not reducing lighting power:

1. The maximum setting for power or light output for each control group of *general lighting* luminaires.
2. The *high-end trim* setting for power or light output for each control group of *general lighting* luminaires.
3. Sampled Testing. For projects with seven or fewer claimed qualifying spaces, the reduction in light level or reduction in power due to *high-end trim* shall be tested in all spaces and shown to reduce the general lighting power or light level by at least 15 percent. For projects with more than seven claimed qualifying spaces, the reduction in light level or reduction in power due to *high-end trim* shall be tested in at least 10 percent of spaces, and no less than seven spaces, and shown to reduce general lighting power or light level by at least 15 percent. If more than 30% of the tested spaces fail, all the remaining qualifying spaces shall be tested.
4. Summarize the reduction in general lighting power resulting from the *high-end trim* setting for each qualifying space and the floor area of each qualifying space.
5. Summarize the fraction of total floor area for spaces where *high-end trim* reduces general lighting power by at least 15 percent.

Reason:

Additional efficiency credit L02 in Public Comment Draft #1 combines two different lighting control strategies: high-end trim, and digitally addressable luminaires.

High-end trim can be accomplished at a reasonable cost and is already recognized in C405.2.3.1 as an alternate for dimming controls. It also has clear and demonstrated energy savings.

Digitally addressable luminaires are extremely expensive, and do not have any demonstrated energy savings.

This proposal dramatically simplifies L02 by eliminating the requirement for digitally addressable luminaires and focusing the credit entirely on high-end trim.

This proposal also clarifies base code requirements for high-end trim lighting controls and adds new functional testing and documentation requirements for projects pursuing energy credit L02.

Cost Impact: This code change proposal will neither increase nor decrease the cost of construction for projects which do not pursue L02. For projects which do pursue L02, the cost of construction will be dramatically reduced.



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-5-22 G01 Demand response lighting controls
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	base
Proponent	CE Electrical power, lighting, renewables subcommittee
Proposal Status	SC review
Subcommittee	CE Electrical power, Lighting, Renewables
Subcommittee Notes	
Recommendation	Reason: This proposal makes a number of important improvements to the code requirements for demand responsive lighting controls.
Vote	approve 13-0
Recommendation Date	12/19/22
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

# Demand Response Lighting Controls

Revise as follows:

C405.2.9 Demand responsive lighting controls. Interior *general lighting* in group B, E, M, and S occupancies shall have *demand responsive controls* complying with C405.2.9.1 in not less than 75 percent of the interior floor area. ~~Buildings shall have controls that are capable of automatically reducing general lighting power not less than 15 percent in response to a demand response signal.~~

Exceptions:

1. Where the combined interior floor area of group B, E, M, and S occupancies is less than 10,000 square feet.
  2. Buildings where a *demand response signal* is not available from a controlling entity other than the owner.
  3. Parking garages.
- ~~1. Buildings with less than 4,000 watts of combined installed general lighting power in spaces that have more than 0.5 W/ft<sup>2</sup> (5.38 W/m<sup>2</sup>) of general lighting power.~~
  - ~~2. Buildings where demand response programs are not available.~~
  - ~~3. I-2 and I-3 occupancies.~~

Add new text as follows:

**C405.2.9.1 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 *demand response signal*.
2. Where high end trim has been set, automatically reducing the output of controlled lighting to 80 percent or less of the high-end trim set point upon receipt of a *demand response signal*.
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.

Revise as follows:

~~C406.3.2 G01 Lighting Load Management. Luminaires shall have dimming capability and automatic load management controls that shall gradually reduce general lighting power during peak periods. The load management controls shall reduce lighting power in 75 percent of the building area by at least 20 percent with continuous dimming over a period no longer than 15 minutes. Where less than 75 percent, but at least 50 percent of the project general lighting is controlled, the credits from Tables C406.3 shall be prorated as follows: A project not required to comply with C405.2.9 can achieve energy credits for installing demand responsive lighting controls for interior *general lighting* that comply with C405.2.9.1. The demand responsive lighting controls shall automatically reduce the light output or power of controlled lighting to no more than 80 percent of full output, or 80 percent of the high-end trim set point, whichever is less. The demand responsive controlled lighting shall be configured to shed 15% or greater lighting load. Energy credits can be earned where demand responsive lighting controls are installed for not less than 50 percent of the interior floor area of the following:~~

1. Not less than 10 percent of the interior floor area in Group R or I occupancies; or
2. Not less than 50 percent of the interior floor area in all other occupancies.

~~Where no less than 50 percent, but not more than 75 percent of the interior floor area on occupancy or project is controlled, the G01 credits shall be prorated using Equation 4-29 with no more than 75 percent of the interior floor area being counted.~~

Revise Equation 4-29 as follows:

[~~building interior floor~~ area with lighting load management, %] x [table credits for C406.3.2] / 75%

~~Exception: Warehouse or retail storage building areas shall be permitted to achieve this credit by switching off at least 25 percent of lighting power in 75 percent of the building area without dimming, or as adjusted by Equation 4-29.~~

Add new sections as follows:

C408.3.1.6 Demand responsive lighting controls G01. For spaces associated with the project receiving

Renewable and Load Management Credits in Section C406.3.2, the following procedures shall be performed:

1. Confirm the maximum set point upon receipt of the *demand response signal* has been established for each space.
2. For projects with seven or fewer rooms with controls, each room shall be tested.
3. For projects with more than seven rooms with controls, testing shall be done for each unique space type. Where multiple rooms of each space type exist, not less than 10 percent and in no case fewer than one room, of each space type shall be tested unless the code official requires a higher percentage to be tested. Where 30 percent or more of the tested controls fail in a space type, all remaining identical space types shall be tested.
4. For demand responsive controls to be tested, verify the following:
  - 1 Where high-end trim controls are used, the high-end trim shall be set before testing.
  - 2 Turn off all non-general lighting in the room.
  - 3 Set general lighting to its maximum illumination level. Where high-end trim is set, this will be the maximum illumination level at the high-end trim setpoint.
  - 4 An illumination measurement shall be taken in an area of the room not controlled by daylight responsive controlled lighting. If there is not an area without daylight responsive controls the daylight responsive controls shall be overridden from reducing the lighting level during the test.
  - 5 Measure and document the room maximum illumination level.
4. Simulate a demand response signal and measure the illumination level at the same location as for the measurement in C408.3.1.5.(4.5). Verify the illumination level has been reduced to no greater than 80 percent of the maximum illumination level documented in C408.3.1.5.(4.5).
5. Simulate the end of a demand event by turning off the demand response signal, confirm controls automatically return to their normal operational settings at the end of the demand response event.

Reason:

This proposal makes a number of important improvements to the code requirements for demand responsive lighting controls:

1. It limits the scope in base code to those occupancies (B, E, M, and S) where this can reasonably be achieved without excessive complexity and/or negative impact on building operations.
2. Changes the 4,000W exception to 10,000 square feet to significantly simplify compliance



determination.

3. Specifies the capabilities of the required controls, so that it is clear to designers and building code officials what control systems would comply.
4. Modifies C406.3.2 to refer to the technical requirements in C405.2.9.1 so that the code can have one clear and consistent standard for how these controls operate.
5. Revises language to be clear that compliance with both base code and energy credits is determined occupancy by occupancy for mixed-use buildings.
6. Adds functional testing requirements for demand responsive lighting controls

To coordinate with C405.2.9 requirements, where a demand response signal is available and the building is not exempt, the credits are reduced by half.

Cost Impact: This code change proposal will decrease the cost of construction by limiting the requirement for demand responsive lighting controls in C405.2.9 to occupancy groups B, E, M, and S.



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-16-22 L05 Residential light control
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	base
Proponent	CE Electrical power, lighting, renewables subcommittee
Proposal Status	SC review
Subcommittee	CE Electrical power, Lighting, Renewables
Subcommittee Notes	
Recommendation	reason: Adds space types for occupant sensor control and removes spaces that already would have been required to install occupant sensors. Also, provide clarifications and makes the language more enforceable.
Vote	approve 15-0-1
Recommendation Date	
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

**C406.2.5.5 L05 Residential light control.** In buildings with Group R-2 occupancy spaces, interior lighting systems shall comply with the following:

1. In common areas, the following space types restrooms, laundry rooms, storage rooms, and utility rooms shall have automatic full OFF occupancy occupant sensor controls that comply with the requirements of C405.2.1.1: Laundry/washing areas, dining areas, food preparation areas, seating areas, exercise areas, playing areas, and massage spaces. Each additional control device shall control no more than 5,000 sq.ft (464 m<sup>2</sup>).
2. In dwelling units, not less than one receptacle in each living room and each sleeping room shall be controlled by a switch in that room.
3. Each dwelling unit shall have a switch main control by the main entrance that turns off all the lighting and all switched receptacles in the dwelling unit. The switch shall be clearly labeled. Two switched receptacles shall be provided in living and sleeping rooms or areas and clearly identified. All switched receptacles shall be located within 12 inches (30 cm) of an unswitched receptacle. The main control shall be permitted to have two controls, one for permanently wired lighting and one for switched receptacles. The main controls should be clearly identified as "lights master off" and "switched outlets master off."

Reason:

This is primarily, but not entirely, an editorial cleanup. The following issues are addressed by this proposal:

1. Some of the listed common area space types are already required to have occupant sensor controls in base code (restrooms, storage rooms).
2. Space types are revised to conform to the list of spaces in C405.3.2(2) for consistency with other sections of the code, and to improve enforceability.
3. *Occupant sensor* is a defined term in the code, but occupancy sensor is not.
4. No common areas in residential building would have individual rooms greater than 5,000 sf.
5. The proposal was not clear on the quantity of switched receptacles required – two per apartment unit, or two per living and sleeping room. We revised to one per living and sleeping room.
6. Usually in residential construction switched receptacles are counted as meeting NEC receptacle requirements. We were not clear on why these are required to be in addition to NEC receptacle requirements (which is the effect of requiring a non-dim receptacle within 12 inches).
7. Having two controls at the main entry makes it more likely that the receptacle switch control will just be left "on".



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-061-22 Electric storage ready
CDP ID #	706
Code	IECC CE
Code Section(s)	C405.16.1
Location	base
Proponent	Diana Burk     diana@newbuildings.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason: Per actions taken with CED1-62.
Recommendation	DISAPPROVE
Vote	February 24, 2023
Recommendation Date	6 - 5 - 1
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>  X  </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-062-22 Battery storage equation
CDP ID #	808
Code	IECC CE
Code Section(s)	C405.16.1
Location	base
Proponent	Steven Rosenstock srosenstock@eei.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason: This proposal makes necessary technical corrections and allows the use of other on-site renewable electric energy production systems.
Recommendation	<p>AS MODIFIED</p> <p><b>C405.16.1 Electrical energy storage energy capacity.</b> Each <i>building</i> shall have one or more ESS with a total rated energy capacity and rated power capacity as follows:</p> <ol style="list-style-type: none"> <li>1. ESS rated energy capacity (kWh) <math>\geq 1.0 \times</math> Installed <del>PV</del> On-site Renewable <del>Electric Energy</del> System Rated Power (kW<sub>bc</sub>)</li> <li>2. ESS rated power capacity (kW) <math>\geq 0.25 \times</math> Installed <del>PV</del> On-site Renewable <del>Electric Energy</del> System Rated Power (kW<sub>bc</sub>).</li> </ol> <p>Where installed, DC coupled battery systems shall meet the requirements for rated energy capacity alone.</p> <p><b>C405.16.2 Electrical energy storage system ready.</b> Each <i>building</i> shall have one or more reserved ESS-ready areas to accommodate future electrical storage complying with the following:</p> <ol style="list-style-type: none"> <li>1. Energy storage system rated energy capacity (<del>kWh</del> kWh) <math>\geq</math> Gross <del>cC</del> conditioned floor area of the three largest <del>stories</del> floors (ft<sup>2</sup>) <math>\times 0.0008</math> kWh/ft<sup>2</sup></li> <li>2. Energy storage system rated power capacity (kW) <math>\geq</math> Gross <del>cC</del> conditioned floor area of three largest <del>stories</del> floors (ft<sup>2</sup>) <math>\times 0.0002</math> <del>kWh</del> kW/ft<sup>2</sup></li> </ol>
Vote	9 - 1 - 1
Recommendation Date	February 24, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-017-22 Electric energy system
CDP ID #	919
Code	IECC CE
Code Section(s)	C103.2
Location	base
Proponent	Bruce Swiecicki bswiecicki@npga.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement: Language change is not needed. Sections to be modified by this proposal already include references to electrical systems.
Recommendation	DISAPPROVE
Vote	10 - 0 - 2
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-057-22 Energy Storage Ready cleanup
CDP ID #	649
Code	IECC CE
Code Section(s)	C405.16
Location	base
Proponent	Michael Tillou michael.tillou@pnnl.gov
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement: This proposal adds clarity to the requirements by relocating system capacity requirements to a more-appropriate subsection. The modification includes editorial improvements.
Recommendation	APPROVED AS MODIFIED
Vote	11 - 1 - 1
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	





## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-058-22 Energy storage system exception
CDP ID #	659
Code	IECC CE
Code Section(s)	C405.16
Location	base
Proponent	Alex Smith asmith@nahb.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: Electrical Energy Storage Systems are not dependent on being paired with on-site renewable energy systems. Stand-alone EESS can operate independently to provide some level of back-up power.
Recommendation	DISAPPROVE
Vote	6 - 4 - 2
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-059-22 Energy storage system to appendix
CDP ID #	747
Code	IECC CE
Code Section(s)	C405.16
Location	appendix
Proponent	Greg Johnson gjohnsonconsulting@gmail.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: The subcommittee believes the requirement is more appropriate in the body of the code.
Recommendation	DISAPPROVE
Vote	6 - 5 - 3
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u> X </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-060-22 Battery storage update
CDP ID #	807
Code	IECC CE
Code Section(s)	C405.16
Location	base
Proponent	Steven Rosenstock srosenstock@eei.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement: The ESS or ESS-ready requirement is not dependent on Renewable Portfolio Standards or percentage of renewables in a particular jurisdiction.
Recommendation	DISAPPROVE
Vote	7 - 5 - 1
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-063-22 ESS Ready Spacing Requirements
CDP ID #	859
Code	IECC CE
Code Section(s)	C405.16.1
Location	base
Proponent	Maureen Guttman mguttpgh@aol.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: The subcommittee disapproves as the equations were corrected in CED1-57 and 62, and felt it was important to keep in the reference to UL9540A to be consistent with the IFC.
Recommendation	DISAPPROVE
Vote	12 - 0 - 1
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>    X    </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-064-22 Additional electric infrastructure
CDP ID #	889
Code	IECC CE
Code Section(s)	C405.17
Location	base
Proponent	Jenny Hernandez     jehernandez@las-cruces.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement: The proposal does not belong in C405, and is incomplete as there are no subsections below the charging language.
Recommendation	DISAPPROVE
Vote	13 - 0 - 2
Recommendation Date	March 6, 2023
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____ X _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-148-22 Curb Heights						
CDP ID #	770						
Code	IECC CE						
Code Section(s)	C503.3.8						
Location	base						
Proponent	Jeff Mang jeff@jcmangconsulting.com						
Proposal Status	SC review						
Subcommittee	CE Envelope						
Subcommittee Notes	<p><b>Reason:</b> Adds needed provisions for equipment curbs to facilitate future roof replacements.</p>						
Recommendation	<p><b>Approve as modified</b></p> <p><b>Modification:</b></p> <p>Add new text as follows:</p> <p><u>503.3.8 Replacement or added roof mounted mechanical equipment. For roofs with insulation entirely above the roof deck and where existing roof-mounted mechanical equipment is replaced or new equipment is added, and the existing roof does not comply with the insulation requirements for new construction in accordance with Section C402.1 and Section C402.2.1, any new equipment curbs and existing curbs for added or replaced equipment shall be of sufficient a height necessary to accommodate the future addition of above-deck roof insulation during a future roof replacement to be installed in accordance with Section C503.2.1, Item 2. Alternatively, the curb height shall comply with Table C503.3.8. Curb height shall be the distance measured from the top of the curb to the top of the roof deck.</u></p> <p><b>Table 503.3.8 Roof Mounted Mechanical Equipment Curb Heights</b></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">CLIMATE ZONE</th> <th style="text-align: left;">CURB HEIGHT, MINIMUM<sup>a</sup></th> </tr> </thead> <tbody> <tr> <td>0 and 1</td> <td>15.0 inches (381 mm)</td> </tr> <tr> <td>2 and 3</td> <td>16.0 inches (406.4 mm)</td> </tr> </tbody> </table>	CLIMATE ZONE	CURB HEIGHT, MINIMUM <sup>a</sup>	0 and 1	15.0 inches (381 mm)	2 and 3	16.0 inches (406.4 mm)
CLIMATE ZONE	CURB HEIGHT, MINIMUM <sup>a</sup>						
0 and 1	15.0 inches (381 mm)						
2 and 3	16.0 inches (406.4 mm)						

	<table border="1"> <tr> <td>4, 5 and 6</td> <td>17.0 inches (431.8 mm)</td> </tr> <tr> <td>7 and 8</td> <td>18.0 inches (457.2 mm)</td> </tr> </table> <p>• <del>a. Curb height shall be the distance measured from the top of the curb to the roof deck.</del></p>	4, 5 and 6	17.0 inches (431.8 mm)	7 and 8	18.0 inches (457.2 mm)
4, 5 and 6	17.0 inches (431.8 mm)				
7 and 8	18.0 inches (457.2 mm)				
Vote	<b>Approve as modified</b> 14-0-2 (CNV)/ HVACR Approve 8-3-1				
Recommendation Date	ENV 1/19/23 HVACR 2/23/23				
Next Step	To Subcommittee CE HVACR & WH To Advisory Group _____ To Consensus Committee _____				
Consensus Committee					
Committee Response					
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____				
Date					



## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CED1-170-22 Provide Exception for R-2 Occupancies for DR Water Heater Controls
CDP ID #	665
Code	IECC CE
Code Section(s)	C404.10
Location	base
Proponent	Greg Johnson gjohnsonconsulting@gmail.com
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	<b>Reason Statement:</b> The IECC HVACR and Water Heating Subcommittee does not agree that R-2 occupancies are different enough from other occupancies to warrant an exception. Further, the proposed text would create a conflict with other requirements in C406.
Recommendation	<b>Disapprove as modified</b> <b>See the full proposal below.</b> The modifications were made by the proponent. The proposal has changed from the version considered at the March 9, 2023 meeting
Vote	<b>Disapproved as modified</b> 5-1-4
Recommendation Date	03/09/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee <u>  X  </u> _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



# 2024 International Energy Conservation Code [CE Project]

Revise as follows:

**C404.10 Demand responsive water heating. Electric storage water heaters with a rated water storage volume of 40 gallons (150L) to 120 gallons (450L) and a nameplate input rating equal to or less than 12kW shall be provided with demand responsive controls in accordance with Table C404.10 or another equivalent approved standard.**

Exceptions:

1. Water heaters that provide a hot water delivery temperature of 180°F (82°C) or greater.
2. Water heaters that comply with Section IV, Part HLW or Section X of the ASME Boiler and Pressure Vessel Code.
3. Water heaters that use 3-phase electric power.

**4 Water heaters in R-2 occupancies.**

**TABLE C406.2(1) BASE ENERGY CREDITS FOR GROUP R-2, R-4, AND I-1 OCCUPANCIES<sup>a</sup>**

ID	Energy Credit Measure	Section	Climate Zone																		
			0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
E01	Envelope Performance	C406.2.1.1	Determined in accordance with Section C406.2.1.1																		
E02	GA reduction (15E)	C406.2.1.2	8	13	7	11	6	8	9	6	1	24	8	9	30	15	5	32	28	31	36
E03	Envelope leak reduction	C406.2.1.3	15	10	12	8	6	16	13	5	1	7	7	9	65	16	1	73	43	52	26
E04	Add Roof Insulation	C406.2.1.4	1	1	1	1	1	1	4	3	1	5	3	4	6	5	1	7	7	6	8
E05	Add Wall Insulation	C406.2.1.5	10	10	6	8	5	6	8	4	1	8	3	4	11	7	1	14	12	13	13
E06	Improve Fenestration	C406.2.1.6	7	7	4	6	9	11	13	3	1	22	5	10	27	18	7	41	33	22	21
H01	HVAC Performance	C406.2.2.1	20	19	16	17	14	13	11	11	5	13	10	8	15	12	7	18	14	17	19
H02	Heating efficiency	C406.2.2.2	x	x	x	x	x	x	3	1	1	6	2	3	10	5	2	14	10	13	16
H03	Cooling efficiency	C406.2.2.3	7	6	4	4	3	3	1	1	1	1	1	1	1	1	x	x	x	x	x
H04	Residential HVAC control	C406.2.2.4	9	10	8	22	20	25	16	17	32	21	24	17	23	27	16	21	24	18	18
H05	DCASIFan control	C406.2.2.5	32	31	27	28	23	23	28	21	12	42	24	24	56	36	19	73	54	70	79
W01	SHW preheat recovery	C406.2.3.1 a	61	63	74	74	85	88	101	100	121	103	109	122	102	111	130	93	106	99	96
W02	Heat pump water heater	C406.2.3.1 b	50	52	62	61	72	74	86	85	104	88	94	106	88	96	112	81	92	87	84
W03	Efficient gas water heater	C406.2.3.1 c	38	39	46	46	53	55	63	62	76	64	68	76	64	69	81	58	66	62	60
W04	SHW pipe insulation	C406.2.3.2	7	7	8	7	8	8	8	9	10	8	9	9	7	8	9	6	7	6	6
W05	Point of use water heaters	C406.2.3.3 a	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
W06	Thermostatic bal. valves	C406.2.3.3 b	3	3	3	3	3	3	3	3	4	3	3	4	3	3	4	3	3	3	2
W07	SHW heat trace system	C406.2.3.3 c	12	12	13	13	14	15	15	15	18	14	15	16	13	14	16	11	13	11	10
W08	SHW submeters	C406.2.3.4	11	11	13	13	15	16	18	18	22	19	20	22	19	20	24	17	20	18	18
W09	SHW distribution sizing	C406.2.3.5	45	46	55	54	63	65	74	73	89	75	80	89	74	81	95	68	77	72	70

ID	Energy Credit Measure	Section	Climate Zone																		
			0A	0B	1A	1B	2A	2B	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	7	8
W10	Shower heat recovery	C406.2.3.6	15	16	19	19	22	23	26	26	32	27	29	32	27	29	34	25	28	27	26
P01	Energy monitoring	C406.2.4	3	3	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	3	
X01	<u>Demand Response Water Heater (R-2)</u>	<u>C406.2.X</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
L01	Lighting Performance	C406.2.5.1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
L02	Lighting dimming H tuning	C406.2.5.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
L03	Increase occp. sensor	C406.2.5.3	3	3	4	4	4	4	3	4	3	2	3	2	1	1	2	1	1	1	1
L04	Increase daylight area	C406.2.5.4	5	5	5	5	5	5	4	4	4	4	4	3	3	4	3	2	3	3	2
L05	Residential light control	C406.2.5.5	8	8	9	9	9	9	8	8	10	6	8	7	4	6	8	3	5	4	3
L06	Light power reduction	C406.2.5.7	2	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	1	1
001	Efficient elevator	C406.2.7.1	4	4	4	4	5	5	5	5	5	4	5	5	4	4	5	4	4	4	3
002	Commercial kitchen equip.	C406.2.7.2	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
003	Residential kitchen equip.	C406.2.7.3	15	15	17	16	17	18	17	18	20	16	17	18	15	16	18	13	15	13	12
004	Fault detection	C406.2.7.4	3	3	2	3	2	2	2	2	1	2	2	1	1	2	1	3	2	3	3

a. "x" indicates credit is not available for that measure.

**Add new text as follows:**

**C406.2.X Demand Response Water Heating for R-2 Occupancies.** For R-2 occupancies, electric storage water heaters with a rated water storage volume of 40 gallons (150L) to 120 gallons (450L) and a nameplate input rating equal to or less than 12kW shall be provided with demand responsive controls in accordance with Table C404.10 or an **other** equivalent *approved* standard.





## International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECD1-14-22 On-site renewables modifications
CDP ID #	
Code	IECC CE
Code Section(s)	
Location	base
Proponent	IECC CE HVACR subcommittee
Proposal Status	SC review
Subcommittee	CE HVACR & WH
Subcommittee Notes	
Recommendation	Approve
Vote	10-0-1
Recommendation Date	2/23/23
Next Step	To Subcommittee To Advisory Group _____ To Consensus Committee _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

# CECD1-14-22

IECC: SECTION 202 (New), C404.2.1, C404.8.3

Proponents: John Bade, representing IECC HVACR & Water Heating Subcommittee

## 2024 International Energy Conservation Code [CE Project]

Add new definition as follows:

**HIGH-CAPACITY GAS-FIRED WATER HEATER.** Gas-fired instantaneous water heaters with a rated input greater than 200,000 Btu/h (58.6 kW) and not less than 4,000 Btu/h per gallon (310 W per litre) of stored water, and gas-fired storage water heaters with a rated input both greater than 105,000 Btu/h (30.8 kW) and less than 4,000 Btu/h per gallon (310 W per litre) of stored water.

Revise as follows:

**C404.2.1 High input service water-heating systems.** Gas-fired ~~service water-heating equipment~~ water heaters installed in new buildings where the total input capacity provided by high-capacity gas-fired water heaters ~~high-capacity service water-heating equipment~~ is 1,000,000 Btu/h (293 kW) or greater shall ~~be in compliance~~ comply with either or both of the following requirements.

1. Where a singular piece of high-capacity gas-fired water heater ~~high-capacity gas-fired service water-heating equipment~~ is installed, ~~such equipment~~ the water heater shall have a thermal efficiency, Et, of not less than 92 percent.
2. Where multiple pieces of high-capacity gas-fired water heaters ~~high-capacity gas-fired service water-heating equipment~~ are connected to the same service water-heating system, the combined input-capacity-weighted-average thermal efficiency, Et, shall not be less than 90 percent and a minimum of 30 percent of the input to the high-capacity gas-fired water heaters ~~gas-fired equipment~~ in the service water-heating system shall have a thermal efficiency of not less than 92 percent.

~~High-capacity gas-fired service water-heating equipment is comprised of gas-fired instantaneous water heaters with a rated input both greater than 200,000 Btu/h (58.6 kW) and not less than 4,000 Btu/h per gallon (310 W per litre) of stored water, and gas-fired storage water heaters with a rated input both greater than 105,000 Btu/h (30.8 kW) and less than 4,000 Btu/h per gallon (310 W per litre) of stored water.~~

**Exceptions:**

1. The input rating of water heaters installed in individual dwelling units shall not be required to be included in the total input rating of service water-heating equipment for a building.
2. The input rating of water heaters with an input rating of not greater than 105,000 Btu/h ( 30.8 kW) shall not be required to be included in the total input rating of service water-heating equipment for a building.
3. Where not less than 25 percent of the annual service water heating requirement is provided by on-site renewable energy or site-recovered energy, the minimum thermal efficiency requirements of this section shall not apply. On-site renewable energy used to meet Sections C405.15.1 or C406.3.1 shall not be used to meet this exception.

**C404.8.3 Covers.** Outdoor heated pools and outdoor permanent spas shall be provided with a vapor-retardant cover or other *approved* vapor-retardant means.

**Exception:** Where more than 75 percent of the energy for heating, computed over an operating season of not fewer than 3 calendar months, is from a heat pump or an on-site renewable energy system, covers or other vapor-retardant means shall not be required. On-site renewable energy used to meet Sections C405.15.1 or C406.3.1 shall not be used to meet this exception.

**Reason:** The exceptions to efficiency requirements in Sections C404.2.1 and C404.8.3 were created long before the IECC included provisions for employing on-site renewable energy. The exceptions were created because the underlying requirements were not cost-effective if a portion of the energy was free. In addition, there was the added benefit of encouraging the use of renewable energy.

The addition of on-site renewable energy requirements in Section C405.15.1 and optional credits in Section C406.3.1 creates a risk that the renewable energy used to meet those sections could be applied to the exceptions. Therefore, this proposal requires that on-site renewable energy used to meet the exception is not the same energy used to meet other requirements.

The changes in the body of C404.2.1 High-input service water-heating systems are editorial and do not change the requirement.

**Cost Impact:** The code change proposal will neither increase nor decrease the cost of construction. Changes are editorial and do not change the requirement.