International Energy Conservation Code
Consensus Committee-Commercial

Meeting Agenda (Draft 2/1/23)

February 8, 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 January 25, 2023

6. Administrative issues.

7. Action Items.
    a. Public Comment Draft 1 Proposals

CED1-89-22(Roof replacement definition)	Envelope disapprove 13-1-4
CED1-103-22(Restore suspended ceiling section)	Envelope approve as modified 18-0-1
CED1-118-22(Roof assembly change to roof-clg)	Envelope approve as modified 15-0-3
CED1-122-22(Roof solar reflectance modification)	Envelope disapprove 15-0-4
CED1-124-22(Roof solar reflectance language)	Envelope as modified 8-6-5
CED1-132-22(Air leakage compliance)	Envelope approve 13-0-2
CED1-144-22(Roof alterations)	Envelope approve 16-0-1
CED1-147-22(Roof alterations)	Envelope approve as modified 15-0-1
CED1-27-22(Revise sleeping unit control req)	Electrical approve as modified 9-0-3
CED1-65-22(Exterior lighting scope expansion)	Electrical approve as modified 10-2-2
CED1-74-22(Park. garage daylight transition zone)	Electrical disapprove 7-5-2

CED1-84-22(Funct. testing of controlled recept.)Electrical approve as modified 13-0-1
CED1-187-22(Parking garage add. Eff. Options) Modeling approve 10-0-2
CED1-191-22(Add. Energy eff. Non-heat pump) Modeling approve as modified 7-5-2
CED1-83-22(Sim. Perf. And EV charging) Modeling disapprove 12-0-2
CED1-199-22(Deletion of add. Energy credits) Modeling disapprove 12-0-2
CED1-207-22(Deletion of Appendix CD) Modeling disapprove 11-0-3
CED1-173-22(H05 DOAS energy credit clarification)HVACR approve 13-0-1

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, February 22, 2023 at 2:00 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.cdpaccess.com/login/

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

Kristopher Stenger, AIA, Director of Energy Programs
International Code Council
kstenger@iccsafe.org

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-089-22 Roof replacement defintion
CDP ID #	886
Code	IECC CE
Code Section(s)	C202
Location	base
Proponent	Glen Clapper gclapper@nrca.net
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason**: Creates a conflict with the requirements of Section 503.2.1.
Recommendation	**Disapprove**
Vote	**Disapprove** 13-1-4 (CNV)
Recommendation Date	1/19/23
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 #	CED1-103-22 Restore suspended ceiling section
CDP ID #	757
Code	IECC CE
Code Section(s)	C402.1.2.1.2
Location	base
Proponent	Jay Crandell jcrandell@aresconsulting.biz
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** Proposal corrects omission of provisions for addressing U-factor and R-value limits for suspended ceilings.
Recommendation	**Approve as modified** **Modification**: C402.1.3.3 Suspended ceilings. Insulation installed on suspended ceilings having removable ceiling tiles shall not be considered part of the ~~minimum~~ thermal resistance (R-value) of roof insulation in roof-ceiling construction. <ANY TEXT IN ORIGINAL PROPOSAL THAT IS NOT SHOWN REMAINS UNCHANGED>
Vote	**Approve as modified** 18-0-1 (CNV)
Recommendation Date	1/19/23
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 #	CED1-118-22 Roof assembly change to roof-ceiling construction
CDP ID #	725
Code	IECC CE
Code Section(s)	C402.2.1
Location	base
Proponent	Jay Crandell jcrandell@aresconsulting.biz
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** Clarifies roof-ceiling construction insulation options and restores provision for minimum thickness of tapered insulation.
Recommendation	**Approve as modified** **Modification**: **Modification: Revise as follows:** **C402.2.1 Roof-ceiling construction ~~assembly~~.** ~~Roof i~~ Insulation materials in the roof-ceiling construction shall be installed between the roof or ceiling framing, continuously below ~~above~~ the ceiling framing, continuously above, below, ~~on~~ or within the roof deck ~~assembly~~ or in any approved combination thereof. Insulation installed above the roof deck shall comply with Sections C402.2.1.1 through C402.2.1.3. **Add new text as follows:** **C402.2.1.3 Minimum thickness of tapered insulation~~, lowest point~~.** The minimum thickness of tapered above-deck roof insulation at its lowest point, gutter edge, roof drain or scupper, shall be not less than 1 inch (25 mm).
Vote	**Approve as modified** 15-0-3 (CNV)
Recommendation Date	1/19/23
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 #	CED1-122-22 Roof solar reflectance modifications
CDP ID #	684
Code	IECC CE
Code Section(s)	C402.4
Location	base
Proponent	Emily Morin emorin@smartsurfacescoalition.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason**: There was no cost-effectiveness nor technical feasibility study to justify expansion of requirements to additional climate zones.
Recommendation	**Disapprove**
Vote	**Disapprove** 15-0-4
Recommendation Date	1/19/23
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 #	CED1-124-22 Roof solar reflectance language clarified
CDP ID #	877
Code	IECC CE
Code Section(s)	C402.4
Location	base
Proponent	Greg Johnson gjohnsonconsulting@gmail.com
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** PV systems are not the only likely rooftop renewable energy systems that may shade roof surfaces. A generic reference to 'renewable' systems eliminates the need for an individual item for solar thermal systems.
Recommendation	**Approve as modified** **Modification**: Revise as follows: C402.4 Roof solar reflectance and thermal emittance. Low-sloped roofs directly above cooled ~~cooled~~ conditioned spaces in *Climate Zones* 0 through 3 shall comply with one or more of the options in Table C402.4. Exceptions: The following roofs and portions of roofs are exempt from the requirements of Table C402.4: 1. Portions of the roof that include or are covered by the following: 1.1. ~~Photovoltaic~~ Renewable energy systems or components. ~~1.2. Solar air or water heating systems or components.~~ 1.3. Vegetative roofs or landscaped roofs. 1.4. Above-roof decks or walkways. 1.5. Skylights. 1.6. HVAC systems and components, and other opaque objects mounted above the roof. <ANY TEXT IN ORIGINAL PROPOSAL THAT IS NOT SHOWN REMAINS UNCHANGED>
Vote	**Approve as modified** 8-6-5 (CNV)
Recommendation Date	1/19/23

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 #	CED1-132-22 Air leakage compliance
CDP ID #	736
Code	IECC CE
Code Section(s)	C402.6.1.3
Location	
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** This proposal corrects one of the air leakage section exceptions from "Group R and I occupancies" to "Group R-2 and I-1 occupancies". While not reflected in the public comment draft, this is an erratum because we already voted last round to make that change to limit that exception to R-2 and I-1. As the public review draft mistakenly included just the Group R and I, and because it would be a substantive change to someone in the public who was not aware of what the committee did, we decided to handle it like a change and vote on it. Specifically, CEPI-58 was modified to allow dwelling unit air leakage testing in lieu of whole building air leakage testing in Group R-2 and I-1 occupancies instead of in all of Group R and I. The modification is clearly stated in the following committee documents: • Meeting Notes IECC Envelope & Embodied Energy Subcommittee for 3/17/2022: Passed AM 18-0-4(CNV), with the amendment to "limit the scope of test method to Group R-2 and I-1" clearly stated as part of the amended text. • Agenda for IECC Consensus Committee- Commercial for 4/13/2022, including code tracking sheet for CEPI-58. The code tracking sheet clearly states "limit the scope of test method to Group R-2 and I-1". • Minutes of IECC Consensus Committee – Commercial for 4/13/2022, showing the CEPI-58 was approved as modified by a vote of 34-0 The change limits the use dwelling unit air leakage testing in lieu of whole building testing to Group R-2 and I-1 occupancies rather than the entire Group R and I occupancies. The dwelling unit air leakage testing option provides a bridge to the IECC-Residential Code provisions and allows more

	continuity between 3-story and 4-story projects. Limiting the dwelling unit testing Group R-2 and I-1, allows dwelling unit testing for multifamily residences (apartment buildings, etc.) including assisted living facilities, but does not allow it for hospitals, prisons or hotels.
Recommendation	**Approve as submitted**
Vote	**Approve as submitted** 13-0-2 (CNV)
Recommendation Date	1/19/23
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 #	CED1-144-22 Roof alterations
CDP ID #	712
Code	IECC CE
Code Section(s)	C503.2.1
Location	base
Proponent	Aaron Phillips aphillips@asphaltroofing.org
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** This proposal makes three minor changes to Section C503.2.1: • A section title that encompasses the enumerated alterations is added. • The word "roof" is removed because it is redundant; the section's title and scope of alterations only addresses matters related to roof alterations. • A spelling error is corrected
Recommendation	**Approve as submitted**
Vote	**Approve as submitted** 16-0-1 (CNV)
Recommendation Date	1/19/23
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 #	CED1-147-22 Roof alterations
CDP ID #	885
Code	IECC CE
Code Section(s)	C503.2.1
Location	base
Proponent	Glen Clapper gclapper@nrca.net
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason:** The modification which requires a third-party report of roof conditions better meets the proponent's intent.
Recommendation	**Approve as modified** **Modification**: C503.2.1 ~~Roof Alterations~~ Roof, ceiling, and attic alterations. Insulation complying with Section C402.1 and Section C402.2.1, or an *approved* design that minimizes deviation from the insulation requirements, shall be provided for the following roof alterations: 1. An alteration of roof-ceiling construction where there is no insulation above conditioned space. 2. Roof replacement for roofs with ~~insulaiton~~ insulation entirely above deck. Exceptions: Where compliance with Section C402.1 cannot be met due to limiting conditions on an existing roof, an *approved* design shall be submitted with the following: 1. *Construction documents* that include a report by a registered design professional or an ~~other~~ *approved* ~~source~~ ~~entity~~ third party documenting details of the limiting conditions affecting compliance with the insulation requirements. 2. *Construction documents* that include a roof design by a registered design professional or an ~~other~~ *approved* ~~source~~ ~~entity~~ third party that minimizes deviation from the insulation requirements. ANY TEXT IN ORIGINAL PROPOSAL THAT IS NOT SHOWN REMAINS UNCHANGED>
Vote	**Approve as modified** 16-0-1 (CNV)
Recommendation Date	1/19/23

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 #	CED1-027-22 Revise sleeping unit control requirements
CDP ID #	842
Code	IECC CE
Code Section(s)	C405.1
Location	base
Proponent	Jack Bailey jbailey@oneluxstudio.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: Improves efficiency while providing reasonable exceptions for some sleeping units to not install occupant sensors.
Recommendation	APPROVE AS MODIFIED **C405.2.10.1 Sleeping units and dwelling units in hotels, motels, and vacation timeshare properties....** **Exception:** Automatic shutoff is not required where captive key override controls all lighting and switched receptacles in units with ~~6~~ 5 or fewer permanently installed lights and switched receptacles.
Vote	9 - 0 - 3
Recommendation Date	January 23, 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 #	CED1-065-22 Exterior lighting scope expansion
CDP ID #	795
Code	IECC CE
Code Section(s)	C405.2
Location	base
Proponent	Bryan Holland bryan.holland@nema.org
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement – "this improves the language of the section by addressing situations where third party lighting is installed. It also addresses lighting at the building site that is controlled by the building owner."
Recommendation	APPROVE AS MODIFIED Modifications are included in the following file: CE Electrical Power, Lighting, Renewables > Proposals > **Jan. 23, 2023** CED1-65_v2_1.19.23.docx
Vote	10 - 2 - 2
Recommendation Date	January 23, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

CED1-65-22

IECC: C405.2, C405.5.1

Proponents: Bryan Holland, representing National Electrical Manufacturers Association (NEMA) (bryan.holland@nema.org)

2024 International Energy Conservation Code [CE Project]

Revise as follows:

C405.2 Lighting controls.

Lighting systems powered through the energy service for the building and any other building site lighting owned and maintained by the building owner and associated with the building project permit shall be provided with controls that comply with Sections C405.2.1 through C405.2.9 .

C405.5.1 Total connected ~~exterior building~~ exterior lighting power.

The total exterior connected lighting power shall be the total maximum rated wattage of all exterior lighting that is powered through the energy service for the building and any other building site lighting owned and maintained by the building owner and associated with the building project permit.

C405.5.2 Exterior lighting power allowance.

The exterior lighting power allowance (watts) is calculated as follows:

2. For each exterior area that is to be illuminated by lighting that is powered through the energy service for the building and any other building site lighting owned and maintained by the building owner and associated with the building project permit, determine the applicable area type from Table C405.5.2(2).

Reason Statement for Revisions:

NEMA believes the added language addresses the concerns of the opponents to CED1-69. The new language ensures that building site lighting that is not owned and maintained by the associated building owner or is not within the scope of a building project permit. In short, if the project specifies separate services for the building premises wiring system and exterior lighting that are under the same building project permit or owned and maintained by the building owner, the IECC-C rules apply to that exterior lighting. If the exterior lighting is owner and maintained by a third party and not under the scope of the building permit project, the IECC-C rules may not apply. C503.5 doesn't apply as long as no alterations are made to any existing lighting on the project site. For example, let' s say a permit is issued for a new parking lot with lighting that also includes alterations to existing parking lot lighting. The new work portion of the permit has to comply with C405.5, the existing work portion complies with C503.5. C503.5.2(1) tells us all the lighting now has to comply with C405.5. However, C405.5.1 will now say only the lighting that is under the scope of the building project permit. This prevents a scenario where all existing lighting on a property suddenly comes under the IECC-C compliance requirements as a result of C503.5 requirements.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-074-22 Parking garage daylight transition zones
CDP ID #	700
Code	IECC CE
Code Section(s)	C405.3.1
Location	base
Proponent	Jack Bailey jbailey@oneluxstudio.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason Statement: Creates a potential rollback in stringency by creating an exception and removing a stated lighting power density for this space type.
Recommendation	DISAPPROVE
Vote	7 - 5 - 2
Recommendation Date	January 23, 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 #	CED1-084-22 Functional testing of controlled receptacles
CDP ID #	895
Code	IECC CE
Code Section(s)	C408.3
Location	base
Proponent	Michael Jouaneh mjouaneh@lutron.com
Proposal Status	SC review
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason statement: "Verifying efficiency through functional testing of controlled receptacles."
Recommendation	APPROVE AS MODIFIED Modifications are included in the following file: CE Electrical Power, Lighting, Renewables > Proposals > **Jan. 23, 2023** CED1-84 Mod-2.docx
Vote	13 - 0 - 1
Recommendation Date	January 23, 2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

CED1-84-22

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

2024 International Energy Conservation Code [CE Project]

Revise as follows:

C408.3 Functional testing of lighting and receptacle controls. Automatic lighting and receptacle controls required by this code shall comply with this section.

C408.3.1 Functional testing. Prior to passing final inspection, the *registered design professional* or *approved agency* shall provide evidence that the lighting and receptacle control systems have been tested to ensure that control hardware and software are calibrated, adjusted, programmed and in proper working condition in accordance with the *construction documents* and manufacturer's instructions. Functional testing shall be in accordance with Sections C408.3.1.1 through C408.3.1.3 for the applicable control type.

C408.3.1.1 Occupant sensor controls. Where *occupant sensor controls* are provided, the following procedures shall be performed:

1. Certify that the *occupant sensor* has been located and aimed in accordance with manufacturer recommendations.
2. For projects with seven or fewer *occupant sensors*, each sensor shall be tested.
3. For projects with more than seven *occupant sensors,* testing shall be done for each unique combination of sensor type and space geometry. Where multiples of each unique combination of sensor type and space geometry are provided, not less than 10 percent and in no case fewer than one, of each combination shall be tested unless the *code official* or design professional requires a higher percentage to be tested. Where 30 percent or more of the tested controls fail, all remaining identical combinations shall be tested.

For *occupant sensor controls* to be tested, verify the following:

1.Where *occupant sensor controls* include status indicators, verify correct operation.
2.The controlled lights and receptacles controlled by *occupant sensor controls* turn off or down to the permitted level within the required time upon vacancy of the space.
3.For auto-on *occupant sensor controls*, the controlled lights and receptacles controlled by *occupant sensor controls* turn on when an occupant enters the space.
4.For manual-on *occupant sensor controls*, the controlled lights and receptacles controlled by *occupant sensor controls* turn on only when manually activated.
5.The lights are not incorrectly turned on by movement in adjacent areas or by HVAC operation.

C408.3.1.2 Time-switch controls. Where *time-switch controls* are provided, ~~the following procedures shall be performed~~ items 1 through 5 shall be performed for all *time-switch controls*. For projects with more than seven spaces where lighting or receptacles are controlled by *time-switch controls*, not less than 10 percent of spaces and in no case fewer than one, shall be tested according to items 6 and 7 unless the code official or design professional requires a higher percentage to be tested. Where 30 percent or more of the tested spaces fail any of the requirements in items 6 and 7, all remaining spaces shall be tested.

1. Confirm that the *time-switch control* is programmed with accurate weekday, weekend and holiday schedules.
2. Provide documentation to the owner of *time-switch controls* programming including weekday, weekend, holiday schedules, and set-up and preference program settings.
3. Verify the correct time and date in the time switch.
4. Verify that any battery back-up is installed and energized.
5. Verify that the override time limit is set to not more than 2 hours.
6. Simulate occupied condition. Verify and document the following:

1.All lights can be turned on and off by their respective area control switch.
2.The switch only operates lighting in the enclosed space in which the switch is located.
3.Receptacles in the space controlled by the *time-switch controls* turn on.

7. Simulate unoccupied condition. Verify and document the following:

1.Nonexempt lighting turns off.
7.2. Manual override switch allows only the lights and receptacles controlled by the *time-switch controls* in the enclosed space where the override switch is located to turn on controlled lighting and receptacles for no more than 2 hours ~~or remain on until the next scheduled shutoff occurs.~~
7.3 ~~Controlled r~~Receptacles controlled by the *time-switch controls* turn off.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-187-22 Parking garage additional efficiency options
CDP ID #	804
Code	IECC CE
Code Section(s)	C406.1.1
Location	base
Proponent	Jack Bailey jbailey@oneluxstudio.com
Proposal Status	SC review
Subcommittee	CE Model, Metrics
Subcommittee Notes	This proposal clarifies that only conditioned spaces are required to achieve C406 efficiency credits because it is impossible for unconditioned spaces to comply.
Recommendation	Approve
Vote	Approve-10, Disapprove-0, Abstain-2
Recommendation Date	
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 #	CED1-191-22 Additional energy efficiency credits for non-heat pump bldg
CDP ID #	825
Code	IECC CE
Code Section(s)	C406.1.1.1
Location	base
Proponent	Mike Waite mwaite@aceee.org
Proposal Status	SC review
Subcommittee	CE Model, Metrics
Subcommittee Notes	This proposal sets 50% higher energy efficiency requirements for buildings that use fossil fuels for anything other than peak space heating needs or that primarily rely on electric resistance for space and hot water heating. Eight subsequent modifications were offered to the original proposal.
Recommendation	Approve as modified. (See attached modification)
Vote	Approve as modified – 7, Disapprove – 5, Abstain – 2
Recommendation Date	1/30/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____x_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____

CED1-191-22 Additional Efficiency Credits for Non-Heat Pump Buildings

Summary of modifications:

1. Changed order of exceptions to C406.1.1.1 and C502.3.7.1 align with C406.1.1
2. Changed 75% of credits for unconditioned parking garages to 50%, identical to C406.1.1
3. Deleted "All cooling systems are electric heat pumps" requirement of the fossil fuel peak heating buildings.
4. Mostly editorial changes to the criteria for fossil fuel peak heating exception.
5. Modifications to C502.3.7.1 corresponding to modifications 1-4
6. Added definition of purchased energy.
7. Revised C406.1.1.1 and C502.3.7.1
8. To be consistent with Subcommittee vote to approve CED1-187 on 1/30/23: Clarified the credits apply only to conditioned floor area and removed the exception related to unconditioned parking garages no longer relevant; renumbered accordingly.

Add to Section C202:

PURCHASED ENERGY: energy or power purchased for consumption and delivered to the building site

Revise and add text to Section C406 as follows:

C406.1.1.1 Buildings without heat pumps. *Buildings* using ~~any~~ *purchased energy* ~~source other than~~ that is not electricity ~~or *on-site renewable energy*~~, *buildings* with electric storage water heaters that are not heat pumps ~~or~~ and *buildings* with total heat pump space heating capacity less than the space heating load at heating design conditions calculated in accordance with Section C403.1.1 shall comply with measures from C406.2 to achieve not less than 1.5 multiplied by the number of required efficiency credits from Table C406.1.1 based on building occupancy group and climate zone. Where a project contains multiple occupancies, credits in Table C406.1.1 from each building occupancy shall be multiplied by 1.5 and weighted by the gross conditioned floor area to determine the weighted average project energy credits required. Accessory occupancies shall be included with the primary occupancy group for purposes of Section C406.

Exceptions:

~~3~~1. Portions of *buildings* devoted to manufacturing or industrial use.

~~1~~2. *Buildings* complying with all of the following:

~~1~~2.1 The *building*'s ~~P~~peak heating load calculated in accordance with Section C403.1.1 is greater than the *building*'s peak cooling load calculated in accordance with Section C403.1.1.

~~1.2 All cooling systems are electric heat pumps.~~

~~1~~2.~~3~~2 The *building*'s ~~T~~total heat pump space heating capacity is not less than 50% of the *building*'s space heating load at heating design conditions calculated in accordance with Section C403.1.1.

~~1~~2.~~4~~3 Any energy source other than electricity or *on-site renewable energy* is used for space heating only when a heat pump cannot provide the necessary heating energy to satisfy the thermostat setting.

~~1~~2.~~5~~4 Electric resistance heat is used only in accordance with Section C403.4.1.1.

~~21. Unconditioned parking garages that achieve 7550% of the credits required for use groups S-1 and S-2 in Table C406.1.1.~~

43. Low-energy *buildings* complying with Section C402.1.1.1.

C406.1.1.~~1~~2 Building Core/Shell and Initial Build-Out Construction. Where separate permits are issued for core and shell buildings and build-out construction, compliance shall be in accordance with the following requirements.

1. Core and shell buildings or portions of buildings shall comply with one of the following:
   1.1 Where the permit includes a central HVAC system or service water heating system with chillers, heat pumps, boilers, service water heating equipment, or loop pumping systems with heat rejection, the project shall achieve not less than 50 percent of the energy credits required ~~in Table C406.1.1~~ by Sections C406.1.1 and C406.1.1.1 in accordance with Section C406.2.

   1.2 Alternatively, the project shall achieve not less than 33 percent of the energy credits required ~~in Table C406.1.1~~ by Sections C406.1.1 and C406.1.1.1.

2. For core and shell buildings or portions of buildings the energy credits achieved shall be subject to the following adjustments:
   2.1 Lighting measure credits shall be determined only for areas with final lighting installed.

   2.2 Where HVAC or service water heating systems are designed to serve the entire building, full HVAC or service water heating measure credits shall be achieved.

   2.3 Where HVAC or service water heating systems are designed to serve individual areas, HVAC or service water heating measure credits achieved shall be reduced in proportion to the floor area with final HVAC systems or final service water heating systems installed.

3. Build-out construction shall be deemed to comply with Section C406.1 where either:
   3.1 Where heating and cooling generation are provided by a previously installed central system, the energy credits achieved in accordance with Section C406.2 under the build-out project are not less than 33 percent of the credits required ~~in Table C406.1.1~~ by Sections C406.1.1 and C406.1.1.1.

   3.2 Where heating and cooling generation are provided by an HVAC system installed in the build out, the energy credits achieved in accordance with Section C406.2 under the build-out project are not less than 50 percent of the credits required ~~in in Table C406.1.1~~ by Sections C406.1.1 and C406.1.1.1.

   3.3 Where the core and shell building was approved in accordance with C407 under 2021 IECC or later.

Add text to Section C502 as follows:

C502.3.7.1 Additions not served by heat pumps *Additions* using ~~any~~ *purchased energy* ~~source other than~~ that is not electricity ~~or *on-site renewable energy*~~, *additions* served by electric storage water heaters that are not heat pumps ~~or~~ and *additions* served by total heat pump space heating capacity less than the peak space heating load at heating design conditions calculated in accordance with Section C403.1.1 shall comply with measures from Sections C406.2 and C406.3 to achieve not less than 75 percent of the number of required efficiency credits from Table C406.1.1 based on building occupancy group and *climate zone*. Where a project contains multiple occupancies, credits in Table C406.1.1 from each building occupancy shall be weighted by the gross floor area to determine the weighted average project energy credits required. Accessory occupancies shall be included with the primary occupancy group for purposes of this section. *Alterations* to the existing building that are not part of an *addition*, but permitted with an *addition*, may be used to achieve the required credits.

Exceptions:

~~2~~1. *Buildings* in Utility and Miscellaneous Group U, Storage Group S, Factory Group F, High-Hazard Group H.

~~3~~2. *Additions* less than 1,000 ft2 (92 m2) and less than 50 percent of existing floor area.

~~4~~3. *Additions* that do not include the addition or replacement of equipment covered by Tables C403.3.2(1) through C403.3.2(16) or Section C404.2.

~~5~~4. *Additions* that do not contain conditioned space.

~~6~~5. Where the *addition* alone or the existing building and *addition* together comply with Section C407.

~~1~~6. *Additions* complying with all of the following:

~~1~~6.1 The *addition*'s ~~P~~peak heating load calculated in accordance with Section C403.1.1 is greater than the *addition*'s peak cooling load calculated in accordance with Section C403.1.1.

~~16.2 All cooling systems serving the *addition* are electric heat pumps.~~

~~1~~6.~~3~~2 The *addition*'s ~~T~~total heat pump space heating capacity serving the *addition* is not less than 50% of the *addition*'s space heating load at heating design conditions calculated in accordance with Section C403.1.1.

~~1~~6.~~4~~3 Any energy source other than electricity or *on-site renewable energy* is used for space heating serving the *addition* only when a heat pump cannot provide the necessary heating energy to satisfy the thermostat setting.

~~1~~6.~~5~~4 Electric resistance heat serving the *addition* is used only in accordance with Section C403.4.1.1.

7. Low-energy *buildings* complying with Section C402.1.1.1.

Reason: The additional energy efficiency credit flexibility is of great value, and the increased requirement for energy savings in this proposal are important. However, the public review draft does not recognize the differences among buildings primarily relying on efficient electric technologies and buildings that continue to rely on fossil fuels for their space heating, water heating and cooking end uses in either their site energy usage or in the imperative to decarbonize buildings. Electric alternatives to fossil fuel systems require less site energy usage, generally considerably less with heat pump coefficients of performance for space and water heating. In general, efficient electric technologies are also already the lowest emission option across end uses. However, in some locations, the use of fossil fuels for peak heating requirements at very low outside air temperatures may represent a comparable site energy option and the lowest emission option when compared to electric resistance supplemental heat in the near- or medium-term. Therefore, it is prudent to allow for flexibility in the model code with an exception for buildings with heat pump heating capacity of more than half of the building's peak heating demand, so long as other heating sources are not the primary heating source. The proposed changes set 50% higher energy efficiency requirements for buildings that use fossil fuels for anything other than peak space heating needs or that primarily rely on electric resistance for space or water heating. This same 50% higher level is included in proposed Section C502.3 text for Additions, which require 50% of those for new buildings.

Cost Statement:

The number of credits that the original proponent of these changes (PNNL) set for Section C406 were determined based on a cost-effectiveness test using an unreasonably high 9.3% nominal discount rate. The Commercial Consensus Committee approved cost-effectiveness criteria of both a 5.3% nominal discount rate and a 9.3% nominal discount rate. The 5.3% discount rate is much more appropriate for this analysis. For PNNL's original submission, they used an 8% nominal discount rate and proposed a set of credit requirements more than 14% higher (area-weighted average by building type and climate zone) than those in the public review draft . A straight line extrapolation would yield 43% higher credit requirements; because the discount rate effect is non-linear, it is reasonable to expect the level of cost-effective credits required to comfortably exceed 50% above those in the public review draft. The public review draft's Appendix CF includes an "Advanced Energy Credits Package" double that of the Section C406 requirements, which PNNL determined to be the maximum credits a jurisdiction could reasonably require.

In addition to the base cost-effectiveness analysis support, the Commercial Consensus Committee provided the option of including a social cost of carbon in cost-effectiveness calculations. PNNL also did not do calculations showing what that high-efficiency cost-effective credit package level would be with a SCC. Further, there is mounting evidence supporting a SCC more than 3X higher than that recommended by the Committee, which warrants further consideration.

This background is somewhat inconsequential as there were indeed cost-effective credit levels with the high discount rate used by PNNL. Under this proposal, anyone can submit a design that meets those low credit levels for a building with electric heat pumps as the primary space heating and water heating

equipment. If they choose to use fossil fuel or electric resistance equipment, they would have to meet a higher number of energy efficiency credits. The entire code has separate energy efficiency requirements depending on the fuel and equipment type chosen, so this proposal is consistent with the current code.

The IECC will often allow less efficiency depending on design decisions without consideration of cost-effectiveness (e.g. where a designer chooses to have a window instead of an opaque wall or in relaxing lighting power density requirements to allow for non-essential services such as advertising lighting). The Committee is certainly not precluded from considering higher efficiency requirements following particular design decisions. The Committee is also not precluded from considering the societal benefits of reducing greenhouse gas emissions, such as they did explicitly in the justification for on-site renewable energy requirements in this public review draft.

In summary: (1) this proposal is cost-effective and (2) the Committee does not have to base its decisions on cost-effectiveness alone.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-083-22 Simulated performance and EV charging
CDP ID #	916
Code	IECC CE
Code Section(s)	C407.1
Location	base
Proponent	Ted Williams ngdllc@outlook.com
Proposal Status	SC review
Subcommittee	CE Model, Metrics
Subcommittee Notes	This proposal would remove the exception for excluding the energy to charge or fuel vehicles for on-road off-site transportation purposes in building performance simulations. It was noted that considerable work had taken place during the development of earlier versions of the IECC to exempt off-site transportation energy.
Recommendation	Disapprove
Vote	Approve – 0, Disapprove – 12, Abstain – 2
Recommendation Date	1/30/23
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 #	CED1-199-22 Deletion of Additional Energy Credits for Simulated Bldg Perf
CDP ID #	898
Code	IECC CE
Code Section(s)	C502.37
Location	base
Proponent	Ted Williams ngdllc@outlook.com
Proposal Status	SC review
Subcommittee	CE Model, Metrics
Subcommittee Notes	This proposal would delete the requirement for obtaining additional efficiency credits for building additions. Achieving additional energy credits in both new construction and additions has been integrated into the IECC and it would be a step backward to remove this requirement.
Recommendation	Disapprove
Vote	Approve – 0, Disapprove – 12, Abstain – 2
Recommendation Date	1/30/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____x_____
Consensus Committee	
Committee Response	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-207-22 Deletion of Appendix CD
CDP ID #	932
Code	IECC CE
Code Section(s)	CD101.1
Location	appendix
Proponent	Ted Williams ngdllc@outlook.com
Proposal Status	SC review
Subcommittee	CE Model, Metrics
Subcommittee Notes	This proposal would delete Appendix CD – "The Glide Path". The deletion of Appendix CD would deprive jurisdictions of an above base code pathway to achieving net-zero goals.
Recommendation	Disapprove
Vote	Approve – 0, Disapprove – 11, Abstain – 3
Recommendation Date	1/30/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____x_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CED1-173-22 Energy Credits Dedicated Outdoor Air Systems
CDP ID #	657
Code	IECC CE
Code Section(s)	C406.2.2.5
Location	base
Proponent	Reid Hart reid.hart.pe@gmail.com
Proposal Status	SC review
Subcommittee	CE Envelope
Subcommittee Notes	**Reason Statement**: Reason: Three minor changes are made to energy credit measure H05 (DOAS) to allow for flexibility. 1. The reference to heating/cooling supply fan operation during ventilation only mode of 0.12 W/cfm is changed from outdoor air to supply air. This is intended to allow continuous operation of destratification convective cooling fans or VRF cassette fans at low speed when heating or cooling is not active. 2. The maximum normal operation outdoor air is increased from 110% to 130% of the IMC minimum outdoor air required to allow for LEED indoor air quality points. 3. An exception for increased economizer operation of the DOAS system is added along with an allowance for emergency outdoor air flushing of spaces. An increased airflow economizer approach can save energy two ways: 1) using cool outdoor air instead of mechanical cooling, and, 2) oversizing the ductwork for economizer operation resulting in reduced fan energy during normal operation.
Recommendation	**Approve as submitted**
Vote	**Approve as submitted** 13-0-1
Recommendation Date	12/26/22
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	