International Energy Conservation Code
Consensus Committee-Commercial

Meeting Agenda (Draft 2/2)

February 9, 2022
2:30 PM EST to 4:30 PM EST (2 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.

3. Roll Call – Hoffman

4. Approval of Agenda

5. Approval of Minutes

6. Administrative issues.

7. Action Items.
   a. Code Change Proposals

CECPI-1-21 (EV combined)	(Elect Power SC approve 10-4-4)
CEPI-142-21 (Grid integrated inverters)	(Elect Power SC approve 12-0-1)
CEPI-60-21 (Elec comm boxes)	(Envelope SC as modified 17-0-1)
CEPI-87-21 (HVAC performance)	(HVACR SC disapprove 17-1-1)
CEPI-89-21 (DX unit Climate Zone except)	(HVACR SC disapprove 16-0-1)
CEPI-102-21 (Humidity controls)	(HVACR SC approved 16-2)
CEPI-106-21 (Outdoor air relief)	(HVACR SC as modified 19-0)
CEPI-111-21 (Parking Garage Ventilation)	(HVACR SC as modified 13-4-1)

8. Subcommittee & Temporary Work Group reports
   a. Construction Cost & LLC- Tillou
   b. Envelope and Embodied Energy- Culp
   c. Electrical Power, Lighting, and Renewables-Jouaneh

d. HVACR & Water Heating-Mozingo
e. Modeling, Whole-Building Metrics, Zero Energy-Eades

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. “3 Minutes of Fame.” Speakers TBD

11. Upcoming meetings.

12. 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/
Energy Complete Monograph
Monograph

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 #	CECPI-1-21 combined EV proposal
CDP ID #	
Code	IECC CE
Code Section(s)	New Section y
Location	base
Proponent	Electrical Power, Lighting, and Renewables Subcommittee
Proposal Status	SC rev
Subcommittee	CE Envelope
Subcommittee Notes	
Recommendation	Approve as submitted
Vote	10-4-4
Recommendation Date	1/24/22
Next Step	To Subcommittee_____ To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

CECPI-1-21 Elec Subcommittee Combine EV proposal (589)

IECC®: SECTION 202 (New), C405.13 (New), C405.13.1 (New), Table C405.13.1 (New), C405.13.2 (New), C405.13.3 (New), C405.13.4 (New), C405.13.4.1 (New), C405.13.5 (New), C405.13.5.1 (New), C405.13.6 (New), UL Chapter 06 (New)

Proponents:

2021 International Energy Conservation Code

Add new definition as follows:

AUTOMOBILE PARKING SPACE. A space within a building or private or public parking lot, exclusive of driveways, ramps, columns, office and work areas, for the parking of an automobile.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, and electric motorcycles, primarily powered by an electric motor that draws current from a building electrical service, EVSE, a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electic current.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). Equipment for plug-in power transfer including the ungrounded, grounded and equipment grounding conductors, and the *electric vehicle* connectors, attachment plugs, personal protection system and all other fittings, devices, power outlets or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the *electric vehicle*.

ELECTRIC VEHICLE SUPPLY EQUIPMENT INSTALLED SPACE (EVSE space). An *automobile parking space* that is provided with a dedicated *EVSE* connection.

ELECTRIC VEHICLE CAPABLE SPACE (EV CAPABLE SPACE). A designated *automobile parking space* that is provided with electrical infrastructure, such as, but not limited to, raceways, cables, electrical capacity, and panelboard or other electrical distribution equipment space, necessary for the future installation of an *EVSE*.

ELECTRIC VEHICLE READY SPACE (EV READY SPACE). An *automobile parking space* that is provided with a branch circuit and either an outlet, junction box or receptacle, that will support an installed *EVSE*.

Add new text as follows:

C405.13 Electric Vehicle Power Transfer Infrastructure.

New parking facilities shall be provided with *electric vehicle* power transfer infrastructure in compliance with Sections C405.13.1 through C405.13.6.

C405.13.1 Quantity.

The number of required *EV spaces*, *EV capable spaces* and *EV ready spaces* shall be determined in accordance with this Section and Table C405.13.1 based on the total number of *automobile parking spaces* and shall be rounded up to the nearest whole number.

- 1.

  Where more than one parking facility is provided on a building site, the number of required *automobile parking spaces* required to have *EV* power transfer infrastructure shall be calculated separately for each parking facility.

- 2.

  Where one shared parking facility serves multiple building occupancies, the required number of spaces shall be determined proportionally based on the floor area of each building occupancy.

- 3.

EVSE spaces that exceed the minimum requirements of this section may be used to meet minimum requirements for *EV ready spaces* and *EV capable spaces*.

Installed

- 4.

EV ready spaces that exceed the minimum requirements of this sectin may be used to meet minimum requirements for *EV capable spaces*.

Installed

- 5.

EV ready spaces, requirements for *EVSE spaces* for R-2 occupancies shall not apply.

Where all (100%) parking serving R-2 occupancies are

- 6.

, *EV ready spaces* and *EV capable spaces* shall be counted toward meeting minimum parking requirements.

EVSE spaces

- 7.

EVSE spaces, *EV ready spaces* and *EV capable spaces* shall be porportionally distributed between non-staff or visitor and staff parking areas.

Where staff parking is designated,

- 8.

Requirements for a Group S-2 parking garage shall be determined by the occupancies served by that parking garage. Where new automobile spaces do not serve specific occupancies, the values for Group S-2 parking garage in Table C405.13.1 shall be used.

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

Table C405.13.1 REQUIRED EV POWER TRANSFER INFRASTRUCTURE

OCCUPANCY	EVSE SPACES	EV READY SPACES	EV CAPABLE SPACES
GROUP A	10%	0%	10%
GROUP B	15%	0%	30%
GROUP E	2%	0%	5%
GROUP F	2%	0%	5%
GROUP H	1%	0%	0%
GROUP I	2%	0%	5%
GROUP M	10%	0%	10%

GROUP R-1	20%	5%	75%
GROUP R-2	20%	5%	75%
GROUP R-3 AND R-4	2%	0%	5%
GROUP S exclusive of parking garages	1%	0%	0%
GROUP S-2 parking garages	1%	0%	0%

C405.13.2 EV Capable Spaces.

Each *EV capable space* used to meet the requirements of Section C405.13.1 shall comply with all of the following:

- 1.

  EV capable space and a suitable panelboard or other onsite electrical distribution equipment.

  A continuous raceway or cable assembly shall be installed between an enclosure or outlet located within 3 feet (914 mm) of the

- 2.

  Installed raceway or cable assembly shall be sized and rated to supply an minimum circuit capactiy in accordance with C405.13.5

- 3.

  The electrical distribution equipment to which the raceway or cable assembly connects shall have sufficient dedicated space and spare electrical capacity for a 2-pole circuit breaker or set of fuses.

- 4.

  electric vehicle supply equipment (EVSE)."

  The electrical enclosure or outlet and the electrical distribution equipment directory shall be marked: "For future

- 5.

  EV capable space.

  Reserved capacity shall be no less than 4.1 kVA (20A 208/240V) for each

C405.13.3 EV Ready Spaces.

Each branch circuit serving EV ready spaces used to meet the requirements of Section C405.13.1 shall comply with all of the following:

- 1.

  EV ready space it serves.

  Terminate at an outlet or enclosure, located within 3 feet (914 mm) of each

- 2.

  Have a minimum circuit capacity in accordance with C405.13.5.

- 3.

The panelboard or other electrical distribution equipment directory shall designate the brach circuit as "For electric vehicle supply equipment (EVSE)" and the outlet or enclosure shall be marked "For electric vehicle supply equipment (EVSE)."

C405.13.4 EVSE Spaces.

An installed *EVSE* with multiple output connections shall be permitted to serve multiple *EVSE spaces*. Each *EVSE* installed to meet the requirements of Section C405.13.1, serving either a single *EVSE space* or multiple *EVSE spaces*, shall comply with all of the following:

- 1.

  Have a minimum circuit capacity in accordance with C405.13.5.

- 2.

  Have a minimum charging rate in accordance with C405.13.4.1.

- 3.

  EVSE space it serves.

  Be located within 3 feet (914 mm) of each

- 4.

  Be installed in accordance with Section C405.13.6.

C405.13.4.1 EVSE Minimum Charging Rate.

Each installed EVSE shall comply with one of the following:

- 1.

  Be capable of charging at a minimum rate of 6.2 kVA (or 30A at 208/240V).

- 2.

  EVSE spaces and controlled by an energy management system providing load management, be capable of simultaneously charing each *EVSE space* at a minimum rate of no less than 3.3 kVA.

  When serving multiple

- 3.

  EVSE spaces allowed to have a minimum circuit capacity of 2.7 kVA in accordance with C405.13.5.1 and controlled by an energy management system providing load management, be capable of simultaneously charging each *ESVE space* at a minimum rate of no less than 2.1 kVA.

  When serving

C405.13.5 Circuit Capacity.

The capacity of electrical infrastructure serving each *EV capable space*, *EV ready space*, and *EVSE space* shall comply with one of the following:

- 1.

  EV ready space or *EVSE space* it serves.

A branch circuit shall have a rated capacity not less than 8.3 kVA (or 40A at 208/240V) for each

- 2.

  The requirements of C405.13.5.1.

C405.13.5.1 Circuit Capacity Management.

The capacity of each branch circuit serving multiple EVSE spaces, EV ready spaces or EV capable spaces designed to be controlled by an energy management system providing load management in accordance with NFPA 70, shall comply with one of the following:

- 1.

  Have a minimum capacity of 4.1 kVA per space.

- 2.

  EV ready spaces or *EVSE space* for R-2 occupancies when all (100%) of the automobile parking spaces designated for R-2 occupancies are designed to be *EV ready spaces* or *EVSE spaces*.

  Have a minimum capacity of 2.7 kVA per space when serving

- 3.

  EV ready spaces or *EVSE spaces* for a building site when all (100%) of the automobile parking spaces are designed to be *EV ready* or *EVSE spaces*.

  Have a minimum capacity of 2.7 kVA per space when serving

C405.13.6 EVSE Installation.

EVSE shall be installed in accordance with NFPA 70 and shall be listed and labeled in accordance with UL 2202 or UL 2594. *EVSE* shall be accessible in accordance with International Building Code Section 1107.

Add new standard(s) as follows:

UL	UL LLC 333 Pfingsten Road Northbrook IL 60062
UL 2202-2009	*Electric Vehicle (EV) Charging System- with revisions through February 2018*
UL	UL LLC 333 Pfingsten Road Northbrook IL 60062
UL 2594-2016	*Standard for Electric Vehicle Supply Equipment*

Reason:
Consensus proposal combines four EV proposals provided this cycle and will improve the effective use of energy supplied to a building by providing electrical connections for automobile spaces
Cost Impact:
The code change proposal will increase the cost of construction.
The code change proposal will increase the cost of construction

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CEPI-142-21 Commercial Grid Integrated Inverters
CDP ID #	184
Code	IECC CE
Code Section(s)	C405.13 New Section y
Location	base
Proponent	Kim Cheslak kim@newbuildings.org
Proposal Status	SC rev
Subcommittee	CE Elec, Light
Subcommittee Notes	
Recommendation	APPROVED AS MODIFIED Direct-current-to-alternating-current inverters serving on-site renewable energy systems or electrical energy storage systems shall be compliant with IEEE 1547-2018a and UL 1741-2021. 1741 - 2021 UL Standard for Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources Reason: Based on the reason statement to make sure that inverters are in compliance with applicable standards. The year is added to the reference standard.
Vote	16 - 0 - 1
Recommendation Date	January 24, 2022
Next Step	To Subcommittee_____ To Advisory Group_____ To Consensus Committee_____X_____
Consensus Committee	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CEPI-060-21 Elec and Communication Boxes
CDP ID #	128
Code	IECC CE
Code Section(s)	C402.5.1.1, C402.5.11 New Section y
Location	base
Proponent	Megan Hayes Megan.Hayes@nema.org
Proposal Status	SC rev
Subcommittee	CE Envelope
Subcommittee Notes	Reason: clarifies requirements for the sealing of electrical boxes that penetrate the air barrier.
Recommendation	**Approve as Modified** *Replace original proposal text with the following:* **C402.5.1.1 Air barrier construction.** The *continuous air barrier* shall be constructed to comply with the following: … 5. Electrical and communication boxes shall comply with C402.5.11 to maintain the integrity of the *air barrier*. *Add new text as follows:* **C402.5.11 Electrical and communication boxes.** Electrical and communication boxes that penetrate the *air barrier* of the *building thermal envelope,* and that do not comply with C402.5.11.1, shall be caulked, taped, gasketed, or otherwise sealed to the *air barrier* element being penetrated. All openings on the concealed portion of the box shall be sealed. Where present, insulation shall rest against all concealed portions of the box. **C402.5.11.1 Air-sealed boxes.** Where air-sealed boxes are installed, they shall be marked in accordance with NEMA OS 4. Air-sealed boxes shall be installed in accordance with the manufacturer's instructions. *(renumber current C402.5.11 as C402.5.12)*
Vote	17-0-1
Recommendation Date	1/20/2022

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	CEPI-087-21 HVAC performance requirements
CDP ID #	215
Code	IECC CE
Code Section(s)	C403.3.2 New Section n
Location	base
Proponent	Glory O'Brien glory.obrien@westernmechanicalsolutions.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	While the good intent of this proposal was understood by the committee, this proposal is problematic with its requirements placed on HVAC manufacturers. This proposal is a misapplication of the energy code. The requirements for providing performance at vague "real world conditions" would very likely be a violation of federal equipment standards preemption regulations.
Recommendation	Disapprove Reason statement: The proposal is problematic since it could lead to violation of federal preemption, and the language is also vague and unenforceable.
Vote	Disapproved 17-1-1
Recommendation Date	1/27/2022
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 #	CEPI-089-21 DX unit Climate Zone exception
CDP ID #	212
Code	IECC CE
Code Section(s)	C403.3.2(12) table New Section n
Location	base
Proponent	Glory O'Brien glory.obrien@westernmechanicalsolutions.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	See reason statement
Recommendation	Disapprove Reason statement: The proposal would exempt AHRI 920 for dry climate zones, but AHRI 920 covers more than just dehumidification performance and it is not appropriate to simply remove the requirement completely for certain climate zones.
Vote	Disapproved 16-0-1
Recommendation Date	1/27/2022
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 #	CEPI-102-21 Humidity Controls
CDP ID #	52
Code	IECC CE
Code Section(s)	C403.4.6, C202, C403.4.6.1, C403.4.6.2, C403.4.6.3 New Section y
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	Motion as submitted (with some minor editorial italicization and underlines)
Recommendation	Approve as submitted Reason statement: This proposal would prevent wasting of energy by dehumidifying or humidifying beyond the requirements for human comfort and health. Exceptions that allow designers to meet other code or accreditation requirements are included. This proposal creates alignment with existing ASHRAE 90.1 requirements.
Vote	Approved 16-2
Recommendation Date	1/27/2022
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 #	CEPI-106-21 Outdoor Air Relief
CDP ID #	97
Code	IECC CE
Code Section(s)	C403.5.3.4 New Section n
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	The current language in Section 403.5.3.4 is vague and unenforceable. Consequently, it is often ignored and violated. The language added in the proposal is specific and enforceable and will achieve the desired intent of the current language. When the relief path has a high static resistance, and the relief is not fan-powered, economizer use results in overpressurization of the building. When the building is overpressurized, occupants often have difficulty opening or closing doors and complain of high air velocities through openings to the outside. The problem is too often resolved by disabling economizer operation and losing the associated energy savings. Requiring return/relief fans or properly sized barometric relief will prevent overpressurization and thus save energy by allowing 100% economizing and eliminating the need for building operators to disable economizers.
Recommendation	Approve as submitted Reason statement: Based on addendum g to ASHRAE 90.1-2019. Proposal will improve code clarity and enforceability and will lead to better economizer operation and achievement of associated energy savings.
Vote	Approved 19-0
Recommendation Date	1/27/2022
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 #	CEPI-111-21 Parking Garage Ventilation
CDP ID #	54
Code	IECC CE
Code Section(s)	C403.7.2 New Section n
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	The proposal was modified in the subcommittee to include a direct reference to the International Mechanical Code. The proposal was also modified to include a 4th numbered provision that lists a requirement for a specific contaminant (carbon monoxide) control, with applicable acceptable thresholds. This language was referenced from California regulation. Some committee members expressed opposition to specific contaminant level requirements in the energy code and preferred that these remain as the scope of the IMC. See attachment below for language as-modified by the subcommittee.
Recommendation	Approve as modified Reason statement: The current requirements for garage ventilation are lenient. The changes to C403.7.2 including the new definition for parking garage section are based on addendum d to ASHRAE 90.1-2019 for parking garage ventilation. This proposal increases stringency for these systems, with additional requirements for pollutant sensors and fan variable speed drives that SSPC 90.1 has determined to be cost-effective.
Vote	Approved as modified 13-4-1
Recommendation Date	1/27/2022
Next Step	To Subcommittee_____ To Advisory Group_____ To Consensus Committee____X_____
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

Proposal As-Modified by HVACR Subcommittee 1/27/22

CEPI-111-21

IECC®: C202 (New), C403.7.2

Proponents: Emily Toto, representing ASHRAE (etoto@ashrae.org)

2021 International Energy Conservation Code

Add new definition as follows:

PARKING GARAGE SECTION. A part of a parking garage where airflow is restricted from other parts of the garage by solid walls.

Revise as follows:

C403.7.2 ~~Enclosed p~~ Parking garage ventilation systems ~~controls~~. ~~Enclosed~~ Ventilation systems employed in parking garages used for storing or handling automobiles operating under their own power shall ~~employ~~ meet all of the following: ~~carbon monoxide detectors applied in conjunction with nitrogen dioxide detectors and automatic controls configured to stage fans or modulate fan average airflow rates to 50 percent or less of design capacity, or intermittently operate fans less than 20 percent of the occupied time or as required to maintain acceptable contaminant levels in accordance with International Mechanical Code provisions. Failure of contamination-sensing devices shall cause the exhaust fans to operate continuously at design airflow.~~

1. **Separate ventilation systems and control systems shall be provided for each *parking garage section*.**
2. **Control systems for each *parking garage section* shall automatically detect and control contaminant levels in accordance with the International Mechanical Code, and shall be capable of and configured to reduce fan airflow to 20% or less of design capacity.**
3. **The ventilation system for each *parking garage section* shall have controls and devices that result in fan motor demand of no more than 30% of design wattage at 50% of the design airflow.**
4. Approved automatic carbon monoxide sensing devices shall be employed to modulate the ventilation system to not exceed a maximum average concentration of carbon monoxide of 50 parts per million during an eight-hour period, with a concentration of not more than 200 parts per million for a period not exceeding one hour.

Exception ~~Exceptions~~:

1. **~~Garages with a total exhaust capacity less than 8,000 cfm (3,755 L/s) with ventilation systems that do not utilize heating or mechanical cooling.~~ Garage ventilation systems serving a single *parking garage section* having a total ventilation system motor nameplate horsepower (ventilation system motor nameplate kilowatt) not exceeding 5 hp (3.7 kW) at fan system design conditions and where the *parking garage section* has no mechanical cooling or mechanical heating.**

~~2. Garages that have a garage area to ventilation system motor nameplate power ratio that exceeds 1,125 cfm/hp (710 L/s/kW) and do not utilize heating or mechanical cooling.~~