



International Energy Conservation Code Consensus Committee-Commercial

Meeting Agenda (Draft 5/5)

May 11, 2022

2:30 PM Eastern to 4:00 PM Eastern (1.5 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
6. Administrative issues.
 - a. Progress indicators
7. Action Items.
 - a. Code Change Proposals
 - CEPI-140-21 (EV Energy Monitoring) (Elect. Power as modified 15-3-1)
 - CEPI-10-21 (AC output UPS system) (Elect. Power disapprove 11-5-3)
 - CEPI-168-21 (Display Lighting) (Elect. Power as modified 16-0-1)
 - CEPI-211-21 (Perf. Mechanical ventilation) (Modeling as modified 15-0-1)
 - CEPI-114-21 (Energy recovery, exception 8)(HVACR disapprove 17-0-0)
 - CEPI-123-21 (Bathroom intermittent exhaust)(HVACR as modified 17-2-0)
 - CEPI-122-21 (Low-capacity fans) (HVACR disapprove 14-3-2)
 - CEPI-118-21 (Elevator dampers) (HVACR approve 19-0-1)
 - CEPI-72-21 (Air Curtain) (HVACR approve as modified 18-0-1)
 - CEPI-124-21 (Ceiling Fan Energy Index) (HVACR approve 18-0-1)
 - CEPI-77-21 (Boiler high cap space heating) (HVACR approve 19-0-0)
 - CEPI-128-21 (Water Heating Eff. High Cap) (HVACR approve 18-0-0)

CEPI-85-21 (Service Water Pressure booster (HVACR approve 18-0-0)
CEPI-121-21 (Small Fan Efficacy) (HVACR approve as modified 14-2-2)
CECPI-6-21(Parking Garage Ventilation) (HVACR approve 18-0-1)

8. Subcommittee & Temporary Work Group reports
 - a. Envelope and Embodied Energy- Culp
 - b. Electrical Power, Lighting, and Renewables-Jouaneh
 - c. HVACR & Water Heating-Shelide
 - d. Modeling, Whole-Building Metrics, Zero Energy-Eades
 - e. Construction Cost & LCC Update- Tillou
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. May 18, 2022 2:00 Eastern
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 #	CEPI-140-21 EV Energy Monitoring
CDP ID #	275
Code	IECC CE
Code Section(s)	C405.12.2 New Section y
Location	base
Proponent	Sean Denniston sean@newbuildings.org
Proposal Status	SC rev
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason: Definition as no longer needed and electrical vehicle charging monitoring is needed separate from other monitored loads.
Recommendation	<p>AS MODIFIED</p> <p>C202 ELECTRIC VEHICLE (EV). An automotive type vehicle for on road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, a fuel cell, a photovoltaic array, or another source of electric current. Plug in hybrid electric vehicles are electric vehicles having a second source of motive power. Off road, self-propelled electric mobile equipment, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats and the like, are not considered electric vehicles.</p>
Vote	15-3-1
Recommendation Date	April 25, 2022
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 #	CEPI-010-21 AC output UPS system
CDP ID #	66
Code	IECC CE
Code Section(s)	C201, C405.13 New Section y
Location	base
Proponent	Nicholas O'Neil noneil@energy350.com
Proposal Status	SC rev
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason: Proposal creates an above code stringency about requirements for UPS in data centers or other undefined occupancies as well as concerns with the definitions. More research is necessary related to DOE pre-emption.
Recommendation	DISAPPROVE
Vote	11 - 5 - 3
Recommendation Date	April 25, 2022
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 #	CEPI-168-21 Display lighting
CDP ID #	84
Code	IECC CE
Code Section(s)	C405.2.5 New Section n
Location	base
Proponent	Glenn Heinmiller glenn@lampartners.com
Proposal Status	SC rev
Subcommittee	CE Elec, Light
Subcommittee Notes	Reason: This proposal simplifies and clarifies requirements by eliminating redundancy.
Recommendation	AS MODIFIED C405.2.5 Specific application controls. 1.2 Display and accent lighting, including lighting in display cases.
Vote	16 - 0 - 1
Recommendation Date	April 25, 2022
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 #	CEPI-211-21 Performance Mechanical Ventilation
CDP ID #	38
Code	IECC CE
Code Section(s)	C407.4.1(1) table New Section n
Location	base
Proponent	Anurag Goel agoel@enverid.com
Proposal Status	SC rev
Subcommittee	CE Model, Metrics
Subcommittee Notes	This CCP allows proposed ventilation to be modeled as designed and baseline ventilation to reflect IMC ventilation requirements.
Recommendation	Accept the attached revised proposal.
Vote	Accept – 15, Reject-0, Abstain-1
Recommendation Date	4/18/22
Next Step	To Subcommittee _____ To Advisory Group _____ To Consensus Committee _____ ✓ _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

Combined CEPI-211 and CEPI-213, as modified 4/18/22:

Building Component Characteristics	Standard Reference Design	Proposed Design
<p><u>Mechanical Ventilation Outdoor Airflow</u></p>	<p>Same as proposed.</p> <p><u>Where the proposed design specifies mechanical ventilation:</u></p> <ol style="list-style-type: none"> 1. <u>For Systems 1-4 as specified in Tables C407.4.1(2) and C407.4.1(3), the outdoor airflow rate shall be determined in accordance with Section C403.7 and IMC Section 403.3.1.1.2.3.4 Equation 4-8, using a system ventilation efficiency (E_v) of 0.75.</u> 2. <u>For Systems 5-11 as specified in Tables C407.4.1(2) and C407.4.1(3), the outdoor airflow rate shall be determined in accordance with Section C403.7 and IMC Section 403.3.</u> <p><u>Where the proposed design specifies natural ventilation, as proposed.</u></p>	<p>As proposed, in accordance with Section C403.2.2.</p>
<p><u>Energy Recovery</u></p>	<p>-</p>	<p><u>As proposed.</u></p>

	<p><u>Where the proposed design specifies mechanical ventilation, as specified in Section C403.7.4 based on the standard reference design airflows.</u></p> <p><u>Where the proposed design specifies natural ventilation, as proposed.</u></p>	
<p><u>Fan Power</u></p>	<p><u>As specified in Section C403.8 for the proposed design.</u></p> <p><u>Exceptions:</u></p> <ol style="list-style-type: none"> <u>1. Where the fan power of the proposed design is exempted from the requirements of Section C403.8, as proposed.</u> <u>2. <i>Fan systems addressed by C403.8.1:</i> Fan system BHP power shall be as proposed or to the limits specified in C403.8.1, whichever is smaller. If the limit is reached, the power of each fan shall be reduced proportionally until the limit is met.</u> <u>3. Fan systems serving areas where the mechanical ventilation is provided in accordance with an engineered ventilation system design of Section 403.2 of the IMC shall not use the particulate filtration or air cleaner pressure drop adjustment available in Table C403.8(12) when calculating the fan system BHP limit for the portion of the airflow being treated to comply with the engineered ventilation system design.</u> 	<p><u>As proposed.</u></p>



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-114-21 Energy recovery, exception 8
CDP ID #	180
Code	IECC CE
Code Section(s)	C403.7.4.2 New Section n
Location	base
Proponent	Glory O'Brien glory.obrien@westernmechanicalsolutions.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Committee discussed the good intent of the proposal. This same issue has been brought up with 90.1 mechanical subcommittee as well. But there is not an apparent solution that we can include in the quick timeframe that our SC has. • Decent proposal, but not in code appropriate language and needs more work. Could come back during public comment.
Recommendation	<p>Disapprove</p> <p>Proposal is not written in appropriate code language. Proponent will be invited to 90.1 working group to address this similar issue in 90.1.</p>
Vote	Motion to Disapprove Passed 17-0-0
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u> X </u> _____</p>
Consensus Committee	
Committee Response	

Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-123-21 Bathroom Intermittent Exhaust Control
CDP ID #	161
Code	IECC CE
Code Section(s)	C403.8.6.2 New Section y
Location	base
Proponent	Glory O'Brien glory.obrien@westernmechanicalsolutions.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Proposal was modified and members of the public worked with the proponent ahead of the subcommittee meeting to modify and provide more options for compliance, towards the same goal/intent of limiting runtime of exhaust fans. Options are meant to align with the most common control methods. • Subcommittee discussion around the residential committee actions and concern for mold issues for bathrooms without windows. The provider of the modified language mentioned that modified language was developed in response to the residential committee's concerns. • Subcommittee question on application of the exception language, with subsequent modification to add "shall not be required to provide additional controls other than manual on capability" • Questions about exactly what is meant by "component of an outdoor air ventilation system" – if an exhaust fan is part of the same building as OA brought in through a separate air handler, then wouldn't it still be part of an "outdoor air ventilation system". Response that this is really a proposal to address multifamily buildings. Added Group R-2, R-3, R-4 to the exception language to clarify. • Question about if it would be possible for residential committee to review and provide feedback before HVACR SC votes. Response from subcommittee member with inclination to vote on this, let other interested parties (residential committee) make a public comment if needed • Question on application to continuous ventilation. IMC allows for intermittent (higher cfm) and continuous (lower cfm) options, how does this apply to both. Clarification that this only applies to exhaust fans designed for intermittent operation, as specified in the charging language.

	<ul style="list-style-type: none"> Question about how someone might know if a fan is on, if it uses option 1. Response that some people can hear it, could interlock with light or have a visible light, or you can see the time remaining on a dial, etc. Not specified in this proposal, but could be addressed if needed.
Recommendation	<p>Approve As Modified (see attached modification)</p> <p>Reason: This proposal will reduce energy consumption in buildings.</p>
Vote	Motion to approve as modified passed 17-2-0
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u>X</u> _____</p>
Consensus Committee	
Committee Response	
Vote	<p>Affirmative _____ Negative _____ Table _____</p> <p>To Subcommittee _____</p>
Date	

CEPI-123-21 As Modified

IECC®: C403.8.6.2 (New)

Proponents:

Glory O'Brien, representing Western Mechanical Solutions (glory.obrien@westernmechanicalsolutions.com)

2021 International Energy Conservation Code

Add new text as follows:

C403.8.6.2 ~~Bathroom~~ Intermittent Exhaust Control for Bathrooms and Toilet Rooms.

~~When a bathroom exhaust system is designed for intermittent operation, the power shall be provided through an automatic shutoff timer switch with a maximum time limit of 30 minutes.~~

Where an exhaust system serving a bathroom or toilet room is designed for intermittent operation, the exhaust system shall be provided with manual-on capability and one or more of the following controls:

1. Timer control that has a minimum set point of no greater than 20 minutes.
2. Occupancy control that automatically turns off exhaust fans within 30 minutes after all occupants have left the space.
3. Humidity control capable of manual or automatic adjustment between a relative humidity range of $\leq 50\%$ to a maximum of 80%.
4. Contaminant control that responds to particle or gaseous concentration.

Exception: Bathroom and toilet room exhaust systems serving as a component of an outdoor air ventilation system in Group R-2, R-3 and R-4 occupancies shall not be required to provide additional controls other than manual on capability.



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-122-21 Low-capacity fans
CDP ID #	53
Code	IECC CE
Code Section(s)	C403.8.5, TABLE C403.8.5 New Section n
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • CEPI-122 is very similar in scope to CEPI-121 • A motion was made to approve CEPI-122, with the reason that this one aligns with ASHRAE and it is inappropriate to make changes to proposals that differ from ASHRAE. • Subcommittee questions about if both 121 and 122 pass? It is the intention of committees to work out conflicting proposals. But if there are, it is worked out at committee and typically the last proposal has precedence • Motion to approve as submitted failed 4-10-5 • New motion to disapprove, based on subcommittee action on CEPI-121
Recommendation	<p>Disapprove</p> <p>Reason: based on subcommittee action on CEPI-121</p>
Vote	Motion to disapprove passes 14-3-2
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u> X </u> _____</p>
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-118-21 Elevator dampers
CDP ID #	107
Code	IECC CE
Code Section(s)	C403.7.7 New Section n
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> Motion to approve as submitted, stand on reason statement provided
Recommendation	<p>Approve</p> <p>Reason (referenced from original proposal): Based on ASHRAE 90.1-2019 Addendum m.</p> <p>Elevator shaft vents are no longer required by most model codes, but many machine-room-less elevator manufacturers insist on a vent to help maintain shaft temperatures that may rise due to heat produced by the cab-mounted elevator machinery. These vents are not likely necessary or even useful for temperature control in most applications due to the heat losses to the conditioned spaces adjacent to the elevator shaft that should result in acceptable shaft temperatures. However, they are being used nonetheless.</p> <p>These vents are typically open year-round. This proposal requires that if such vents are installed, they are controlled to only open based on a thermostatic setting.</p>
Vote	Motion to approve passed 19-0-1
Recommendation Date	4/28/2022
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 #	CEPI-072-21 Air Curtain
CDP ID #	196
Code	IECC CE
Code Section(s)	C402.5.9, C403.4.1.4 New Section n
Location	base
Proponent	Amanda Hickman amanda@thehickmangroup.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Proposal updates terminology, reviewed by envelope subcommittee of IECC. • Subcommittee questions about changing “velocity” to “jet speed”, when it is measured 6 inches above the floor and is really “velocity” at that point since jet speed is right at the discharge. Responses that “velocity” is a speed and direction, but this is just referring to speed. • Is “jet speed” a defined or well understood term? • Subcommittee proposed to move back to “velocity”, since jet speed connotes a location right at the discharge. Proponent is fine with friendly modification, the term “velocity” is consistent with AMCA standards
Recommendation	<p>Approve as modified</p> <p>Reason: The primary reason for this proposal is to make clarifications regarding air curtain unit requirements, consistent with provisions for air curtain units in a parallel proposal for ASHRAE 90.1-2022 that has undergone public review without comments (ASHRAE 90.1-2019 addendum ao).</p> <p>There are a few places in this proposal that add the word "unit" where appropriate to "air curtain" (including the definition), which help to clarify the difference between the air curtain (the stream of air) and the air curtain unit (the product creating the air curtain).</p> <p>Under Exception 7 to Section C402.5.9, there are a few clarifications related to the use of air curtain units. Adding ISO 27327-1 as an optional test standard adds flexibility as to which standard the product can be tested to. The pointer for compliance of controls with Section C403.4.1.4 is intended to help instruct the code user with the requirements for air curtain units</p>

	that have integral heating. The change to the title of Section C403.4.1.4 is intended to have the same effect.
Vote	Motion to Approve as modified passed 18-0-1
Recommendation Date	4/28/2022
Next Step	To Subcommittee _____ To Advisory Group _____ To Consensus Committee <u> X </u>
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

CEPI-72-21 As Modified

IECC®: SECTION 202, C402.5.9, C403.4.1.4, AMCA Chapter 06, ISO Chapter 06 (New)

Proponents:

Amanda Hickman, representing Air Movement and Control Association (AMCA) (amanda@thehickmangroup.com);
Emily Toto, representing ASHRAE (etoto@ashrae.org)

2021 International Energy Conservation Code

Revise as follows:

~~IECC2021P1E_CE_Ch02_SecC202_DefAIR_CURTAIN~~ AIR CURTAIN UNIT. A device, installed at the *building entrance*, that generates and discharges a laminar air stream intended to prevent the infiltration of external, unconditioned air into the conditioned spaces, or the loss of interior, conditioned air to the outside.

C402.5.9 Vestibules.

Building entrances shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. The installation of one or more revolving doors in the *building entrance* shall not eliminate the requirement that a vestibule be provided on any doors adjacent to revolving doors.

Exceptions: Vestibules are not required for the following:

1. Buildings in Climate Zones 0 through 2.
2. Doors not intended to be used by the public, such as doors to mechanical or electrical equipment rooms, or intended solely for employee use.
3. Doors opening directly from a sleeping unit or dwelling unit.
4. Doors that open directly from a space less than 3,000 square feet (298 m²) in area.
5. Revolving doors.
6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.
7. Doors that have an air curtain unit with a ~~velocity jet speed~~ of not less than 6.56 feet per second (2 m/s) at 6.0 inches (15 cm) above the floor that have has been tested in accordance with ANSI/AMCA 220 or ISO 27327-1 and installed in accordance with the manufacturer's instructions. Manual or automatic controls shall be provided that will operate the air curtain unit with the opening and closing of the door and comply with Section C403.4.1.4. Air curtains units and their controls shall comply with Section C408.2.3.

C403.4.1.4 Heated or cooled vestibules or air curtain units with integral heating.

The heating systems for heated vestibules and air curtains units with integral heating shall be provided with controls configured to shut off the source of heating when the outdoor air temperature is greater than 45°F (7°C). Vestibule heating and cooling systems shall be controlled by a thermostat located in the vestibule configured to limit heating to a temperature not greater than 60°F (16°C) and cooling to a temperature not less than 85°F (29°C).

Exception: Control of heating or cooling provided by site-recovered energy or transfer air that would otherwise be exhausted.

AMCA Air Movement and Control Association International 30 West University Drive Arlington

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Heights IL 60004-1806 220-0521 Laboratory Methods of Testing Air Curtain Units for Aerodynamic Performance Rating

Add new standard(s) as follows:

ISO International Organization for Standardization Chemin de Blandonnet 8, CP 401, 1214 Vernier Geneva Switzerland ISO 27327-1(2009) Air Curtain Units - Laboratory Methods of Testing for Aerodynamic Performance Rating

Reason Statement:

The primary reason for this proposal is to make clarifications regarding air curtain unit requirements, consistent with provisions for air curtain units in a parallel proposal for ASHRAE 90.1-2022 that has undergone public review without comments (ASHRAE 90.1-2019 addendum ao).

There are a few places in this proposal that add the word "unit" where appropriate to "air curtain" (including the definition), which help to clarify the difference between the air curtain (the stream of air) and the air curtain unit (the product creating the air curtain).

Under Exception 7 to Section C402.5.9, there are a few clarifications related to the use of air curtain units. Adding ISO 27327-1 as an optional test standard adds flexibility as to which standard the product can be tested to. The pointer for compliance of controls with Section C403.4.1.4 is intended to help instruct the code user with the requirements for air curtain units that have integral heating. The change to the title of Section C403.4.1.4 is intended to have the same effect.

Cost Impact:

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

This proposal adds clarity to the sections on air curtain units, consistent with the parallel ASHRAE 90.1-2022 proposal mentioned in the reason statement. This proposal does not add any new requirements. Therefore, it will not increase the cost of construction.

CEPI-72-21



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-124-21 Ceiling Fan Energy Index
CDP ID #	197
Code	IECC CE
Code Section(s)	C403.9 New Section y
Location	base
Proponent	Amanda Hickman amanda@thehickmangroup.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Proposal is consistent with federal standards and what is going through 90.1 • US DOE is undergoing rulemaking for ceiling fans. Is this consistent with the current an ongoing activity? • DOE did provide a technical support document and AMCA responded. DOE process is still ongoing. New rulemaking won't take effect for several years, so this could potentially be revisited then if needed. Indications point to keeping CFEI metric and potentially changing test procedure. • Current proposal is consistent with current law • Per US DOE, feedback from DOE appliance standards colleagues is that this is consistent and is not an issue • Matches current law, supports matching current law even if it needs to be updated later • Value in getting CFEI metric into the code
Recommendation	<p>Approve</p> <p>Reason: matches current federal regulations</p>
Vote	Motion to approve passed 18-0-1
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u> X </u></p>
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-077-21 Boiler High Capacity Space Heating Gas
CDP ID #	51
Code	IECC CE
Code Section(s)	C403.10, C403.10.1, C403.10.2 New Section y
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Large boiler systems must comply. 10 million btu/h limit is there because it can be difficult for these very large boilers to meet the requirement. But the range in the proposal covers the great majority of applications. This is a second round of revision for the proposal, which included many boiler manufacturers, as part of 90.1 • Proposal was based on the pre-existing water heating requirement that was similar for water heating systems. Confirmation that since this is based on large systems and new construction, federal preemption is not an issue with DOE, AHRI, manufacturers. • Administrative item: there is already a section C403.10, so there will be a numbering issue. Response from IECC that renumbering is an administrative issue that IECC staff can handle. There will be multiple other renumbering efforts as all the proposals are combined. • Some discussion around the best place to put this language. SC decided to make it a new section, any reorganization can be addressed if needed through public comment
Recommendation	<p>Approve</p> <p>Reason (reference original reason statement in proposal): This proposal adds an implementation of condensing boilers for new construction to achieve condensing-level efficiency (i.e., 90% Et) for large boiler systems (i.e., between 1 million and 10 million Btuh), where the proper design considerations are included so that the condensing boilers will operate properly. To ensure condensing occurs, requirements are added to ensure boiler entering water temperature is designed to be low, and able to be maintained low, by minimizing recirculation of hot-water supply into the return.</p> <p>The introduction of these new requirements is important because boilers represent 40% of the heating in commercial buildings and are especially prevalent in cold climates and current levels specified in Table C403.3.2(6)</p>

	<p>are not enough to achieve condensing boiler level efficiency. A challenge for condensing boilers for hot-water heating is that they require system design changes and the use of higher delta entering and leaving temperature to maintain condensing operation to ensure they operate efficiently.</p> <p>The proposed text seen here was approved for publication in 90.1-2019 as addendum bc to 90.1-2016. There is a slight modification to the charging language to clarify that the capacity threshold applies to individual systems and not the total boiler capacity for the building.</p> <p>This addendum was closely reviewed by designers, manufacturers, and users. The boiler working group held meetings with all stakeholders to ensure that all concerns were addressed.</p>
Vote	Motion to approve passed 19-0-0
Recommendation Date	4/28/2022
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 #	CEPI-128-21 Water Heater Efficiency High Capacity
CDP ID #	116
Code	IECC CE
Code Section(s)	C404.2.1 New Section n
Location	base
Proponent	Emily Toto etoto@ashrae.org
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Proposal intent is to make language more precise and more enforceable. • Minor modification from 100,000 Btu/hr to 105,000 Btu/hr in Exception 3
Recommendation	<p>Approve as modified</p> <p>Reason: (reference original reason statement from proposal)</p> <p>Addendum ah to 90.1-2019. This addendum makes a slight modification the to requirements for high-capacity water heaters.</p> <p>Currently, the 92% Et requirement applies if there is just one water heater in the entire building. The change requires that the 92% Et apply for any individual system that is high-capacity.</p> <p>Where multiple water heaters are connected to the same system, the average thermal efficiency is still 90%, but now at least 30% of the capacity must have a thermal efficiency of 92% or better.</p> <p>Recognizes that water heaters up to 105,000 Btu/h are rated using the UEF metric, so the exemption was raised from 100,000 Btu/h.</p> <p>Clear criteria have been established for high-capacity water heaters.</p> <p>Commercial water heaters in the United States are regulated by the US Department of Energy (US DOE) under 10 CFR Part 431. These are the definitions of the products from the regulation:</p> <p>Gas-fired instantaneous water heaters with a rated input both greater than 200,000 Btu/h and not less than 4,000 Btu/h per gallon of stored water; or,</p> <p>Gas-fired storage water heaters with a rated input both greater than 105,000 Btu/h and less than 4,000 Btu/h per gallon of stored water.</p>

	<p>These definitions are used to describe "high-capacity gas-fired service water heating equipment." Service water heaters that are not included are consumer products regulated under 10 CFR Part 430 and "residential-duty commercial water heaters" as defined in 10 CFR Part 431. These products are rated using the Uniform Energy Factor, which cannot be readily compared to Et.</p> <p>Other changes:</p> <p>The exception for buildings that use site-solar or on-site recovered energy has been deleted since there are now general provisions covering renewables in other parts of the code.</p>
Vote	Motion to approve as modified passed 18-0-0
Recommendation Date	4/28/2022
Next Step	To Subcommittee _____ To Advisory Group _____ To Consensus Committee <u> X </u> _____
Consensus Committee	
Committee Response	
Vote	Affirmative _____ Negative _____ Table _____ To Subcommittee _____
Date	

CEPI-128-21, as modified

IECC®: C404.2.1

Proponents:

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

2021 International Energy Conservation Code

Revise as follows:

C404.2.1 High input service water-heating systems.

Gas-fired service water-heating equipment in new buildings where the total input capacity provided by high-capacity service water- heating equipment is 1,000,000 Btu/h (293 W) or greater shall be in compliance with either or both of the following requirements:~~this section.~~

- ~~1. Where a singular piece of high-capacity gas-fired service water-heating equipment is installed serves the entire building and the input rating of the equipment is 1,000,000 Btu/h (293 kW) or greater, such equipment shall have a thermal efficiency, Et, of not less than 92 percent.~~
- ~~2. Where multiple Multiple pieces of high-capacity gas-fired service water-heating equipment connected to the same service water- heating system serve the building and the combined input rating of the water-heating equipment is 1,000,000 Btu/h (293 kW) or greater, the combined input-capacity-weighted-average thermal efficiency, Et, shall be not less than 90 percent and a minimum of 30% of the input to the 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. 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.~~
- ~~21.~~ 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.
- ~~32.~~ The input rating of water heaters with an input rating of not greater than 10~~50~~,000 Btu/h (~~29.330.8~~ kW) shall not be required to be included in the total input rating of service water-heating equipment for a building.



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CEPI-085-21 Service Water Pressure-Booster
CDP ID #	146
Code	IECC CE
Code Section(s)	C403.16 New Section y
Location	base
Proponent	Nicholas O'Neil noneil@energy350.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Requirement in ASHRAE, shown to be cost effective. • Note to staff regarding numbering. Staff may need to find the most appropriate location. • Proposed requirement would apply to all service water pumps, not just hot water, so C404 wouldn't be an appropriate location
Recommendation	<p>Approve</p> <p>Reason (referenced from original proposal): The IECC does not have any requirements over pressure boost system operation currently. ASHRAE has had these requirements in place since 90.1-2010 and found them to be a cost-effective requirement for new buildings. Many modern pressure boost systems already comply with ASHRAE standards and have the sensor controls on-board, eliminating the need for a field mounted remote pressure sensor. Furthermore, the energy savings from variable speed pressure boost systems can be substantial, ranging from 20%- 50% (depending on the type of pressure control method).</p>
Vote	Motion to Approve Passed 18-0-0
Recommendation Date	4/28/2022
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 #	CEPI-121-21 Fan Efficacy Table
CDP ID #	246
Code	IECC CE
Code Section(s)	C403.8.5 table, C403.8.5 New Section n
Location	base
Proponent	Mike Moore mmoore@statorllc.com
Proposal Status	SC rev
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> • Per proponent, the intent is to align with 90.1 and IECC-R. Proposal is almost completely coordinated with REPI-95, which was approved by residential committee • Committee questions to clarify that the intent is to add efficacy and include test procedures in the code? Proponent response that the code does have efficacy already for most types. Additions with this proposal are for range hoods, larger > 200 cfm fans, and inclusion of requirement for “balanced” ventilation • Committee questions to clarify that these efficacy requirements align with current Energy Star? And does this mean it requires top 25% of the market? Response that it depends on the product. The levels in this proposal are reachable by many types of equipment. • Committee questions about how much of the market/products would be eliminated with this proposal? Response that HVI database has efficacy, but not market share. Some will be cut out. Energy Star v4.1 for fans was published several years ago. Committee member note that this was addendum a to 90.1, the same questions came up. Price comparison was provided and committee found that you can buy Energy Star fans for the same price as non-Energy Star fans. • Committee questions about if fan manufacturers are showing fan wattage independent of lights, to determine if fan met cfm per watt requirements. Response from proponent that they believe that in HVI directory, ratings are for fan power only. Placing efficacy labels on equipment can be challenging. • Committee concerns about what comes on the box and on the fan, and what the building official will see in the field. Could be hard for the building official to determine compliance. • Intent was a consolidation of proposals, incorporated as many comments as possible.

	<ul style="list-style-type: none"> • Subcommittee made comments wishing to hear CEPI-122 at the same time, chair pulled up 122 to review simultaneously. CEPI-122 is similar, but does not include balanced ventilation or range hood information • Committee member voiced preference for CEPI-121, since it adds more clarity. Likes consistency between 90.1 and IECC, but sees updates made in CEPI-121 to be more clear. • Subcommittee straw poll indicated preference for CEPI-121 (8 votes) vs. CEPI 122 (3 votes)
Recommendation	<p>Approve As Modified</p> <p>Reason: Clarifies the code and moves the footnote to show it applies to all the issues</p>
Vote	Motion to approve as modified passed 14-2-2
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u>X</u> _____</p>
Consensus Committee	
Committee Response	
Vote	<p>Affirmative _____ Negative _____ Table _____</p> <p>To Subcommittee _____</p>
Date	

CEPI-121-21 As Modified

Replace CEPI-121 as follows:

C403.8.5 Low-capacity ventilation fans. Mechanical ventilation system fans with motors less than 1/12 hp (0.062 kW) in capacity shall meet the efficacy requirements of Table C403.8.5 at one or more rating points. Airflow shall be tested in accordance with the test procedure referenced in Table C403.8.5 and listed. The airflow shall be reported in the product listing or on the label. Fan efficacy shall be reported in the product listing or shall be derived from the input power and airflow values reported in the product listing or on the label. Fan efficacy for fully ducted HRV, ERV, balanced and in-line fans shall be determined at a static pressure not less than 0.2 inch w.c. Fan efficacy for ducted range hoods, bathroom and utility room fans shall be determined at a static pressure not less than 0.1 inch w.c.

Exceptions:

1. Where ventilation fans are a component of a listed heating or cooling appliance.
2. Dryer exhaust duct power ventilators, domestic range hoods and domestic range booster fans that operate intermittently.
3. Fans in radon mitigation systems.
4. Fans not covered within the scope of the test methods referenced by Table C403.8.5
5. Ceiling fans regulated under 10 CFR 430 Appendix U.

**TABLE C403.8.5
LOW-CAPACITY VENTILATION FAN EFFICACY***

FAN LOCATION SYSTEM TYPE	AIRFLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY (CFM/WAT T)	TEST PROCEDURE	AIRFLOW RATE MAXIMUM (CFM)
<u>Balanced ventilation system without heat or energy recovery</u>	<u>Any</u>	<u>1.2^a</u>	<u>ASHRAE Standard 51 (ANSI/AMCA Standard 210)</u>	
HRV or ERV	Any	1.2 ^a efm/watt	<u>CAN/CSA 439</u>	Any
<u>Range hood</u>	<u>Any</u>	<u>2.8</u>	<u>ASHRAE Standard 51 (ANSI/AMCA Standard 210)</u>	—
In-line <u>supply or exhaust fan</u>	Any	3.8 efm/watt		Any
<u>Bathroom, Utility Room</u>	< 90	2.8 efm/watt		< 90
<u>Bathroom, Utility Room</u>	<u>≥ 90 and < 200</u>	3.5 efm/watt		Any
<u>Other exhaust fan</u>	<u>≥ 200</u>	<u>4.0</u>		—

For SI: 1 cfm/foot = 47.82 W/0.47 L/s.

a. For balanced systems, HRVs, and ERVs, determine the efficacy as the outdoor airflow divided by the total fan power. Airflow shall be tested in accordance with HVI 916 and listed. Efficacy shall be listed or shall be derived from listed power and airflow. Fan efficacy for fully ducted HRV, ERV, balanced and in line fans shall be determined at a static pressure not less than 0.2 inch w.c. Fan efficacy for ducted range hoods, bathroom and utility room fans shall be determined at a static pressure not less than 0.1 inch w.c.

Add new standard(s) as follows:

CSA CSA Group 8501 East Pleasant Valley Road Cleveland OH 44131-5516

CAN/CSA-C439-18 Laboratory methods of test for rating the performance of heat/energy-recovery ventilators

ASHRAE ASHRAE 180 Technology Parkway NW Peachtree Corners GA 30092

ASHRAE Standard 51-16 (ANSI/AMCA Standard 210-16). Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating



International Energy Conservation Code Code Change Proposal Tracking Sheet

Proposal #	CECPI-6 Parking Garage Ventilation
CDP ID #	
Code	IECC CE
Code Section(s)	C403.7.2 New Section n
Location	base
Proponent	HVACR & WH Subcommittee
Proposal Status	
Subcommittee	CE HVACR & WH
Subcommittee Notes	<ul style="list-style-type: none"> This proposal originated with CEPI-111, which was originally approved as modified by the HVACR Subcommittee but was reviewed by the full E4C committee and returned to the HVACR subcommittee for revision. HVACR Subcommittee and original proponent decided to make this a committee proposal since it has been modified from the original proposal. The main difference in CECPI-6 and CEPI-111 is that CECPI-6 has additional language to clarify the definition of “parking garage section” and also includes a reference to the IMC.
Recommendation	<p>Approve</p> <p>Reason statement: The current requirements for garage ventilation are lenient. The changes to C403.7.2 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.</p>
Vote	Motion to approve passed 18-0-1
Recommendation Date	4/28/2022
Next Step	<p>To Subcommittee _____</p> <p>To Advisory Group _____</p> <p>To Consensus Committee <u> X </u></p>
Consensus Committee	

Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

CECPI-6-21

2021 International Energy Conservation Code

Add new definition as follows:

PARKING GARAGE SECTION. A part of a parking garage that is separated from all other parts of the garage by full-height solid walls or operable openings that are intended to remain closed during normal operation and where vehicles cannot pass to other parts of the garage. It may include multiple floors if there are ramps to allow vehicles to pass between the floors.

Revise as follows:

C403.7.2 ~~Enclosed~~ 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.

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.~~