International Energy Conservation Code
Consensus Committee-Residential

Draft Meeting Agenda (3/27/23 posting)

Webex Meeting Link

March 30, 2023
2:00 PM EST to 5 PM EST (3 hours)

Committee Chair: JC Hudgison, CBO, Assoc. AIA
Committee Vice Chair: Bridget Herring & Robin Yochum, LEED Green Associate

1. Call to order.

2. Meeting Conduct.
   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.

4. Approve Agenda

5. Approve Minutes-March 23, 2023

6. Administrative issues-staff

7. Action Items
Tabled items from 3/23

RED1-225-22(Rim joists)	Envelope disapprove 10-9-1
RED1-226-22(Sealed air barrier)	Envelope approve 18-0-1
RED1-228-22(Above grade walls)	Envelope disapprove 9-8-1
RED1-231-22(Electrical boxes)	Envelope approve 14-4-1
RED1-233-22(Fireplace requirements)	Envelope approve 18-1
RED1-243-22 PI & II(Relocate rooms cont. fuel burning app)	Envelope approve 15-1-2
RED1-244-22(Air-sealed outlet boxes)	Envelope disapprove 12-6-1
RED1-245-22(Air-sealed outlet boxes)	Envelope approve 11-8
RED1-247-22(Attic ventilation)	Envelope disapprove 14-1-4

RED1-248-22(Attic ventilation)	Envelope disapprove 14-8-3

New items for review

RED1-313-22(Compact HW distribution in R408)	HVACR as modified 10-0
RED1-311-22(Water volume determination)	HVACR disapprove 9-0-1
RED1-319-22(HRV/ERV in climate zone 5)	HVACR disapprove 7-3
RED1-340-22(Fuel type in table)	HVACR as modified 8-0-1
RED1-292-22(Heat pump supplementary heat edit)	HVACR approve 8-1
RED1-289-22(Grid integrated thermostats)	HVACR disapprove 6-1-3
RED1-330-22(High efficiency lighting and range hood exc)	HVACR as modified 8-0-2
RED1-280-22 PI & II(Zonal heating)	HVACR approve 9-0
RED1-281-22(ASTM standard update)	HVACR approve 8-0
RED1-334-22(Gas supply tubing)	HVACR disapprove 9-0
RED1-335-22(Water heater editorial changes)	HVACR approve 6-4
RED1-189-22(Emittance)	Envelope approve 11-1-3
IRCED1-7-22(Air leakage testing exception edit)	Envelope approve 14-0
RED1-238-22(Multi-unit testing)	Envelope disapprove 10-4-2
RED1-237-22(Editorial revision)	Envelope approve 15-0
RED1-184-22 PI & II(Move during testing)	Envelope approve 17-0
RED1-224-22 PI & II(Air leakage edits)	Envelope as modified 13-2
RED1-222-22(Air Leakage revision)	Envelope as modified 14-0
RED1-186-22(Replace Total UA with thermal conductance)	Envelope as modified 13-0-1
RED1-220-22(Language change R402.4.3)	Envelope disapprove 14-0
RED1-221-22(Language change R402.4.4)	Envelope disapprove 14-0
RED1-214-22(Language change R402.2.5)	Envelope disapprove 14-0
RED1-208-22(Envelope req for simulated bldg. perf)	Envelope as modified 9-4-1
RED1-253-22(Tropical climate region IECC-C ref)	Envelope disapprove 7-6-1

8. Other business.

9. Upcoming meetings. April 6 at 1 PM EST

10. Adjourn.

FOR FURTHER IECC Residential INFORMATION BE SURE TO VISIT THE ICC WEBSITE:
IECC Residential Website

Join by phone

1-844-740-1264 USA Toll Free

+1-415-655-0003 US Toll

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

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

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-225-22 Rim joists
CDP ID #	1005
Code	IECC RE
Code Section(s)	R402.5.1.1
Location	base
Proponent	Robby Schwarz robby@btankinc.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	The proposal does not offer clarity in proper code language and offers concepts and permissive language.
Vote	10-9-1 for disapproval
Recommendation Date	3/8/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-225-22 – Modification NOT HEARD BY SUBCOMMITTEE

Proponents: Robert Schwarz, representing BUILDTank, Inc. (robby@btankinc.com)

2024 International Energy Conservation Code [RE Project]

Add new text as follows:

R402.2.12 Rim joist and sill plate requirements. Where a floor system's rim joist rests upon a sill plate ~~on top of a foundation wall that separates conditioned from unconditioned space~~, the junction of the sill plate to the foundation shall be sealed. Capillary break materials installed between the sill plate and the foundation shall not be used as air sealing materials unless specifically designed and installed for such use.

Where a floor system's ~~For all~~ rim joists separating conditioned from unconditioned space, the rim joist to the sill plate or top plate, and the rim joist to subfloor connections shall be air sealed. Rim joists in cantilever floor systems or floors over garage shall be air sealed.

Rim joists which are part of the thermal envelope assembly shall be insulated to ~~at least~~ the same R-value as ~~the~~ proposed for the above grade exterior wall. The insulation shall be in ~~continuous~~ alignment with the air barrier and when air permeable insulation is used shall be enclosed. ~~within an air barrier system. on six sides. Enclosure may be accomplished by installing a finished surface on the underside of the floor system.~~

Revise as follows.

TABLE R402.5.1.1 AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION[a]

COMPONENT	AIR BARRIER CRITERIA INSULATION	INSTALLATION CRITERIA
Rim Joist	Rim joists shall include an air barrier. The junctions of the rim board to the sill plate and the rim board and the subfloor shall be air sealed.	Rim joist shall be insulated per Section R402.2.12 ~~Rim joists shall be insulated so that the insulation maintains permanent contact with the exterior rim board.~~[b]

b. Insulation full enclosure is not required in unconditioned/ventilated attic spaces ~~and at rim joists~~.

Reason:

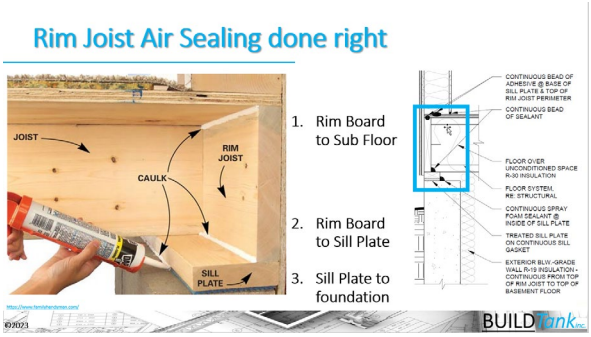
The energy code defines the building thermal envelope, air barrier, and continuous air barrier systems as assemblies of building materials brought together in the construction process for specific purposes. By doing so the code does not say that the air or thermal control layer is one defined surface within an assembly. It also does not say that it can't be one defined layer. In

Table R402.4.1.1 now R402.5.1.1, it talks about air barriers inside, such as behind a tube, and outside, like on the exterior side of a knee wall. Consistently the code talks about the assembly and as I read it, it says that you can choose to have one primary air barrier either on the exterior or interior but that does not negate the requirement of the continuity of what could be called the supplemental air barrier. For example, if a taped zip system is installed as the primary exterior air barrier it would not negate the requirements to maintain the continuity of the interior supplemental air barrier behind the tub or fireplace etc. So, the code is promoting a belts and suspenders assembly approach not just to get the control of air flow through our assemblies form an energy perspective, but also to control moisture/vapor control. Just like building science is recognizing the synergy of assemblies the suite of I-code is a family of code that work synergistically to create performance from the perspectives of health and safety, long term durability, resiliency, and energy efficiency. The notion of enclosing air permeable insulation in an air barrier system of assembly makes sense from an energy perspective to achieve its rated R-value but also from a building durability and performance perspective to control moister moving with air through the insulation to the first condensing surface. This is what this proposal is about. Stop the moisture damage that we are seeing at the rim joist and get better energy performance as well.

This proposal modification address the few areas of concern that were mentioned at the envelope subcommittee hearing during the incredibly tight vote to disapprove this proposal (10/9). Specifically the committee is comping to terms that we should not be pointing to the R or U-value tables for insulation requirements as performance approaches can determine alternative well performing thermal assemblies. Second, it appears that the building science regarding enclosing fibrous air permeable insulation is sound to incorporate in the code but the idea of speaking about six sided enclose is not comprehensive enough to describe all possible applications. Therefore, this phrase has been removed from the modification. In addition, the idea of achieving enclose by installing a finished material like drywall on the unenclosed surface of a floor system, for example in a conditioned but not finished basement, has been removed due to objections and potential miss understanding.

Rim joist at foundations and between floor are notoriously leaky and difficult to insulate. They are one of the first areas of the Building Thermal Envelope that are addresses when seeking to build a more airtight house, yet the IECC continues not to address them well or call them out specifically in the installation sections or R402. A specific requirement section is needed to address them. This proposal deals with the air leakage issues and the insulation issues. For too long fibrous insulation has been allowed to be installed in locations without complete enclosure. Fibrous air permeable insulation in any cavity must be enclosed within an air barrier system. This cavity is not tall, but convection through the material occurs because it is often open to large volume spaces, the greater volume of the basement or crawl space for example. Building durability is often associated with this location and lack of enclosure when warm moist air migrates through air permeable insulation and condenses on the rim joist surface. The code often calls out for interior air barrier installation to enclose insulation and prevent warm moist air from migrating toward the fist condensing surface. This is just a continuation of this

requirement in a building that has not been addressed be the code in the past to prevent continued failures at that location. This modification addresses concerns some raised regarding the air sealing section of this proposal. It specially addresses sealing the sill plate to the foundation in the specifical location where rim joist are adjacent to the foundation as well as, sealing the rim joist to the sill or top plate and the subfloor in all location where the rim joist assembly is located.



Some believe that the above grade wall definition should be enough to ensure that the rim joist is insulated to the same R-value as the above grade wall. However, it is common to see the Rim Joist insulated with less R-value and different insulation material than used in the above grade wall. This section just makes it clear that the minimum requirement for R-value is the same as that proposed for the above grade walls and the rim joist as they are both unique and separate building envelope assemblies. This does not preclude the option of installing the less R-value than is called out in the R-value table it merely indicates that alternative software modeling approaches must be used to demonstrate compliance when it is proposed to insulate the rim joist differently than the above grade wall.

Cost Impact: The code change proposal will increase the cost of construction.
This will impact the first cost of construction as it is a new code requirement to enclose the fibrous insulation installed in the rim/band joist. However, performance will improve, and operational cost and comfort will be impacted positively.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-226-22 Sealed air barrier
CDP ID #	1035
Code	IECC RE
Code Section(s)	R402.5.1.1
Location	base
Proponent	Alex Smith asmith@nahb.org
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Helps clarify the code by reducing potential for misinterpretation.
Vote	18-0-1 for approval
Recommendation Date	3/8/23
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 #	RED1-228-22 Above grade walls
CDP ID #	1007
Code	IECC RE
Code Section(s)	R402.5.1.1 table
Location	base
Proponent	Robby Schwarz robby@btankinc.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Too much uncertain terminology and insulating headers provides additional challenges.
Vote	9-8-1 for disapproval
Recommendation Date	3/8/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-228-22 – Modification NOT REVIEWED BY SUBCOMMITTEE

Proponents: Robert Schwarz, representing BUILDTank, Inc. (robby@btankinc.com)

Existing 2021 IECC definition included for context.

ABOVE-GRADE WALL. A wall more than 50 percent above grade and enclosing *conditioned space*. This includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, walls enclosing a mansard roof and *skylight* shafts.

CONTINUOUS INSULATION (ci). Insulating material that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior or exterior, or is integral to any opaque surface, of the *building* envelope.

2024 International Energy Conservation Code [RE Project]

Revise as follows:

TABLE R402.5.1.1 AIR BARRIER, AIR SEALING AND INSULATION INSTALLATION[a]

COMPONENET	AIR BARRIER/SEAL CRITERIA	INSULATION INSTALLATION CRITERIA
Above Grade Walls	The junction ~~of~~ between the foundation and sill plate shall be air sealed. The junction between ~~of the~~ interior and exterior top plates and the drywall or other finished interior material adjacent to unconditioned space shall be air sealed. ~~The junction of the top plate and the top of exterior walls shall be sealed.~~ The junction of the bottom plate to the subfloor on exterior walls separating conditioned space from unconditioned space shall be air sealed. ~~Knee walls shall be sealed.~~	Air permeable insulation installed in wall cavities shall be enclosed in an air barrier assembly. ~~on six sides.~~ Building thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. Where interior walls meet exterior insulated wall framing the junction shall be framed to receive insulation material having a thermal resistance, R-value, of not less than R-3 per inch, unless *continuous insulation* is installed on the above grade wall, or a framed uninsulated corner assembly is required for structural design. ~~to maintain the continuity of the installed cavity insulation.~~ Corners in exterior insulated framed walls shall be framed to receive insulation material having a thermal resistance, R-value, of not less than R-3 per inch, unless *continuous insulation* is installed on the above grade wall, or a framed uninsulated corner assembly is required for structural design. ~~documented to impact the structural integrity of the building.~~ ~~Cavities within~~ Corners ~~in exterior~~ ~~and headers~~ ~~of frame walls shall be insulated~~ ~~by completely filling the cavity~~ ~~with a material having a thermal resistance, R-value, of not less than R-3 per inch.~~ Headers shall not be installed in exterior insulated walls unless the assembly is required for structural design. ~~is documented to impact the structural integrity of the building.~~ Headers ~~on~~ in exterior insulated walls in Climate zones 3-8, shall be insulated with material having a thermal resistance, R-value, of not less than R-5, unless *continuous insulation* is installed on

		the above grade wall, or a framed uninsulated header assembly is required for structural design. ~~the assembly is documented to impact the structural integrity of the building.~~ ~~Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier.~~

Reason: Above Grade wall is a defined term, Walls is not so the component name should be changed as proposed. The objective of table R402.4.1.1 is to offer guidance for how to create an airtight well insulated home that meets the air leakage requirements of the IECC. Air barrier and insulation installation are part of the equation to be able to accomplish this goal, but air sealing is another part of it that has been missing from the title. The tables name now accurately reflects the air sealing goal.

Air barrier and air sealing criteria section:
A modification was made here to be clarify where the junction to be sealed is. Prior to the modification it talked about the top plate but did not describe the drywall or finish material that created the junction that needs to be sealed.
Clarification of the language requiring drywall to be sealed to the top plate is needed to make it clear that all wall top plates (interior wall and exterior insulated wall top plates) that are adjacent to unconditioned space must be sealed. Believe it or not, in the field there is confusion regarding what exterior means. In a square house for example, does it mean four exterior walls, or does it mean top plates that are adjacent to unconditioned space, which would include interior walls that are adjacent to unconditioned space. The gained clarity of this air sealing activity addresses one of the largest air leakage sources on the high side of the home. NAIMA recently released "Five Priority Air Sealing Locations" from an Owens Corning study and listed the junction of the top plate and drywall adjacent to unconditioned spaces above as number one. They estimate that over 300 lineal feet of leakage is present. Multiply 300 feet by an 1/8" gap, and you get an almost 6060 window-sized hole to the outside at this location. Our field experience shows that the current language in this section of the code causes confusion because it says, "seal the junction of the top plate and exterior wall." Many incorrectly assume that this means the top plate of the 4 exterior walls and not all top plates connected to the exterior or unconditioned space in a square house for example. This code change clearly breaks up the many requirements in this section into bite-size bits of understandable code language that those in the field that are applying the code need. For example, insulated corners and headers were jumbled together in one long sentence. Now, they are separated and clarified so the requirement is clear and understandable.

The junction of the bottom plate to the subfloor on exterior walls has not been addressed specifically by the IECC is one of the larges sources of air leakage in homes and therefore I have added this low hanging air sealing opportunity to the table.

A reference to knee walls has as a new section has been dedicated to the unique assembly in the 2024 IECC.

Insulation Installation Criteria:

Air permeable insulation must be enclosed in an air barrier to trap pockets of air that are required to resist the flow of energy. This new language proposed so the table is in alignment with manufacture installation instruction and quickly expresses what is required to executed properly in the field. In addition, ensuring that insulation is in alignment with the air barrier system is important. There has been concern that the language is only pertinent for wood framed walls. The language explicitly states that the air permeable insulation installed in a wall cavity must be enclosed so, for example, for CMU walls or behind masonry it is not an issue.

Corners and headers are significantly different assemblies to insulate. Headers, in particulate may not have a true cavity to insulate and may be better suited to insulate with foam board as a replacement material for ½" spacing material used in three ply headers. This proposal breaks the two assemblies into separately addressed assemblies. This also makes these two existing requirements stand out for better understanding and enforcement.

Corners are created in framed walls were interior walls meet exterior walls and when exterior insulated walls change direction to define conditioned space. I have broken these up because although both need to be insulated only the exterior insulated wall corner may create a case where structural integrity could impact that ability to insulate the framed corner.
Language was modified in the section addressing the two cased where framed walls create corners (where interior walls meet exterior walls and traditionally framed corners) so consistency with the language is maintained and to allow exceptions when continuous insulation is installed, or structural engineering trumps the ability to meet insulation requirement.

With regards to headers, we have learned that they are not structurally needed in non-loadbearing walls yet continue to install them and in load bearing walls they are needed but create a significant cold surface that impact the energy and durability performance of the wall assembly. Therefore, these two situations have been described in the proposal with deference to documented situations where structural integrity of the assembly could be impacted.
For Headers a modification has been made so consistency with the language is maintained and to allow exceptions when continuous insulation is installed, or structural engineering trumps the ability to meet insulation requirement.

Cost Impact: The code change proposal will increase the cost of construction.
The proposed language will only **minimally** impact the cost of construction, but the increased clarity of existing requirements far outweighs any increase in cost. Only two new requirements have really been added by this proposal.
1. Sealing the bottom plate to the subfloor. This could add material and labor cost, however in order to meet the current level or air tightness is probably being done. In those areas that areas that are struggling to meet the air leakage requirement this low hanging fruit needs to be made clear.
2. The proposed requirement for headers to be insulated to R-5 will in cost neutral because insulated headers are already required but adds greater flexibility for implementation. In addition, there is now an allowance to not insulated headers in climates zones 0-2. When three ply header is replaced with a two-ply header the 1.5" space is often insulated with a material that has an R-value of 3 per inch. On the other hand, when half inch spacers are replaced with R2.5 1/2" foam board the material can achieve R5 but is not an r3 per inch.

Bibliography: This proposal aligns with ENERGY STAR requirements that are the basis of the creation of this table and have been adopted by the IECC in the past.

ENERGY STAR Requirements:
https://www.energystar.gov/sites/default/files/Rater%20F%20v104%202018-07 10_Clean_fillable.pdf
2. Fully-Aligned Air Barriers 6 At each insulated location below, a complete air barrier is provided that is fully aligned as follows:
Walls: At exterior vertical surface of wall insulation in all climate zones; also at interior vertical surface of wall insulation in Climate Zones 4-8 8
2.2 Walls behind showers, tubs, staircases, and fireplaces
2.3 Attic knee walls and skylight shaft walls
2.4 Walls adjoining porch roofs or garages
2.5 Double-walls and all other exterior walls
Footnote 8
All insulated vertical surfaces are considered walls (e.g., above and below grade exterior walls, knee walls) and must meet the air barrier requirements for walls.
4. Air Sealing (Unless otherwise noted below, "sealed" indicates the use of caulk, foam, or equivalent material)
4.3 Above-grade sill plates adjacent to conditioned space sealed to foundation or sub-floor. Gasket also placed beneath above-grade sill plate if resting atop concrete / masonry & adjacent to cond. Space.
4.4 Continuous top plate or blocking is at top of walls adjoining unconditioned space, and sealed.
4.5 Drywall sealed to top plate at all unconditioned attic / wall interfaces using caulk, foam, drywall adhesive (but not other construction adhesives), or equivalent material. Either apply sealant directly between drywall and top plate or to the seam between the two from the attic above.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-231-22 Electrical boxes
CDP ID #	1040
Code	IECC RE
Code Section(s)	R402.5.1.1 table
Location	base
Proponent	Alex Smith asmith@nahb.org
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Proposal removes redundant language
Vote	14-4-1 for approval
Recommendation Date	3/8/23
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 #	RED1-233-22 Fireplace requirements
CDP ID #	1275
Code	IECC RE
Code Section(s)	R402.5.1.1 table
Location	base
Proponent	Shannon Corcoran SCorcoran@aga.org
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Proposal removes redundant language
Vote	18-1-0 for approval
Recommendation Date	3/8/23
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 #	RED1-243-22 PI & II Relocate rooms containing fuel burning appl
CDP ID #	1281
Code	IECC RE
Code Section(s)	R402.5.4
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Voted with part 2
Recommendation	Proposal moves the fuel-burning appliance section to a more appropriate section.
Vote	15-1-2 for approval
Recommendation Date	3/8/23
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 #	RED1-244-22 Air-sealed outlet boxes
CDP ID #	1136
Code	IECC RE
Code Section(s)	R402.5.6
Location	base
Proponent	Robby Schwarz robby@btankinc.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Unneeded. Does not add clarity to the code and could add more confusion. Also cost concerns.
Vote	12-6-1 for disapproval
Recommendation Date	3/8/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-244-22 Modification NOT REVIEWED BY SUBCOMMITTEE

Proponents: Robert Schwarz, representing BUILDTank, Inc. (robby@buildtankinc.com)

2024 International Energy Conservation Code [RE Project]

Revise as follows:

R402.5.6 Air-Sealed electrical and communication outlet boxes PC

R402.5.6 Air-Sealed electrical and communication outlet boxes and other equipment boxes, housings, and enclosures.

Air-sealed electrical and communication outlet boxes and other equipment boxes, housings, and enclosures that penetrate the air barrier of the building thermal envelope shall be made airtight and shall be caulked, taped, gasketed, or otherwise sealed to the air barrier element being penetrated to limit air leakage between conditioned and unconditioned spaces. ~~and Air sealed boxes shall be buried in or surrounded by insulation~~.

When Air-sealed **electrical and communication outlet** boxes are used, they shall be tested and marked in accordance with NEMA OS 4. Labeled Air-sealed boxes shall be installed in accordance with the manufacturer's instructions.

When Electrical and communication outlet boxes and other equipment boxes, housings, and enclosures are installed in the *buildings thermal envelope* the insulation shall be cut to fit tightly around them or the insulation shall be installed to sound and readily conform to the available insulated space.

Reason:

It is important to have consistency in the language of the code. The air barrier air sealing and insulation installation table has language that is different than Section R402.5.6 and this proposal better ensures that the requirements align. The notion of other equipment boxes, housings, and enclosures now calls out fan housing, low voltage boxes, and audio speaker boxes, for example, that need to be sealed when installed within the building's thermal envelope. This level of air sealing better ensures the ability of a builder to achieve the air leakage requirements of the energy code and lets them know up front what needs to be addressed in order to be successful at achieving the requirement.

The proposed modification is made in recognition that the original intent of this proposal was not to mandate NEMA OS4 electrical communication boxes but rater to require air sealing of electrical boxes OR when air tight boxes are installed to ensure that NEMA OS4 boxes are used. Therefore, installation requirements needed to be included with regard to how to make normal electrical boxes, housing and other equipment boxes airtight. Then it needed to be stated "When air sealed boxes are installed", what to do. Finally the installation of insulation around the different types of boxes needed to be discussed.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction. This proposal does not impact cost of construction but better ensure that the requirements for air sealing the home align in all sections of the code.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-245-22 Air-sealed outlet boxes
CDP ID #	1140
Code	IECC RE
Code Section(s)	R402.5.6
Location	base
Proponent	Shane Hoeper shoeper@cityofdubuque.org
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Motion to disapprove failed
Recommendation	There may not be insulation required depending upon the assembly; plus this is an air sealing section - not an insulation section
Vote	11-8-0 for approval
Recommendation Date	3/8/23
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 #	RED1-247-22 Attic ventilation
CDP ID #	1337
Code	IECC RE
Code Section(s)	R403.3.3
Location	base
Proponent	Craig Conner craig.conner@mac.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Language is unclear as to the requirements and may create confusion in the industry
Vote	14-1-3 disapprove
Recommendation Date	3/8/23
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 #	RED1-248-22 Attic ventilation
CDP ID #	1340
Code	IECC RE
Code Section(s)	R403.3.3?
Location	base
Proponent	Craig Conner craig.conner@mac.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Prior action of RED1-247 (Language is unclear as to the requirements and may create confusion in the industry)
Vote	14-0-3 disapprove
Recommendation Date	3/8/23
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 #	RED1-313-22 Compact HW distribution in R408
CDP ID #	1079
Code	IECC RE
Code Section(s)	R403.5.4 table
Location	base
Proponent	Gary Klein iecc-pipe-insulation@2050partners.com
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	HVACR and Water Heating water heating working group chair recommendation to approved as modified. With little discussion the subcommittee agreed and the motion and second to approve as modified carried
Recommendation	HVACR and Water Heating vote is to approve as modified.
Vote	10/0/0
Recommendation Date	3/13/2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-313-22

Proponents: Gary Klein, representing Self (gary@garykleinassociates.com); Mark Lyles, representing California IOUs (markl@newbuildings.org)

2024 International Energy Conservation Code [RE Project]

Revise as follows:

R403.5.4 Water volume determination. The water volume in the piping between a source of heated water and the termination of a fixture supply shall be calculated in accordance with this section. Water heaters, circulating water systems and heat trace temperature maintenance systems shall be considered to be sources of heated water. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the nearest source of heated water and the termination of the fixture supply pipe. The volume in the piping shall be determined from Table R403.5.4. The volume contained within fixture shutoff valves, within flexible water supply connectors to a fixture fitting and within a fixture fitting shall not be included in the water volume determination. Where heated water is supplied by a recirculating system or heat-traced piping, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.

R408.2.3 Reduced energy use in service water-heatingoptions. For measure numbers R408.2.3 (1) through R408.2.3 (5), the hot water system shall meet one of the Uniform Energy Factors (UEF) or Solar Uniform Energy Factors (SUEF)~~:~~ in Table R408.2.3. The compact hot water distribution measure ~~For measure number R408.2.3 (6), the hot water system~~ shall comply with R408.2.3.1.
~~To field or plan review verify that the system meets the prescribed limit, one of the following must be done:~~

1. ~~At plan review, referencing ounces of water per foot of tube on plans as per Table R403.5.4.~~
2. ~~At rough in (plumbing), referencing ounces of water per foot of tube installed as per Table R403.5.4.~~
3. ~~At final inspection. In accordance with Department of Energy's Zero Energy Ready Home National Specification (Rev. 07 or higher) footnote on Hot water delivery systems.~~

R408.2.3.1 Compact hot water distribution. To claim the ~~For Co~~compact ~~H~~ hot ~~W~~ water D distribution system credit, the ~~volume~~ pipe shall store not more than 16 ounces of water ~~in~~ between the nearest source of heated water and the termination of the fixture supply pipe when calculated using section R403.5.4. Where the source of heated water is a circulation loop, the loop shall be primed with a *demand recirculation water system.* There shall be a dedicated return line for the loop that begins after the branch to the last fixture on the supply portion of the loop and runs back to the water heater. ~~When the hot water source is the nearest primed plumbing loop or trunk, this must be primed with an on-demand recirculation pump and must run a dedicated ambient return line from the furthest fixture or end of loop to the water heater. In order to claim this credit, the dwelling must have a minimum of 1.5 bathrooms.~~
~~To field or plan review, verify that the system meets the prescribed limit, one of the following must be done:~~

1. ~~At plan review, referencing ounces of water per foot of tube on plans as per Table R403.5.4.1~~
2. ~~At rough in (plumbing), referencing ounces of water per foot of tube installed as per Table R403.5.4.1~~
3. ~~At final inspection, in accordance with Department of Energy's Zero Energy Ready Home National Specification (Rev. 07 or higher) footnote on Hot water delivery systems.~~

Reason: Minor edits were made to the language which clarify the requirements. This public comment removes the minimum requirement of 1.5 bathrooms to claim this credit. If there is only one bathroom, a kitchen and perhaps a laundry room, they could be close to each other and to the water heater or far from each other and the water heater, or one could be close and the other far. The intent of the credit is to encourage the architect to get the fixtures close to the water heater(s). If this is somehow not possible, then installing an on-demand primed circulation loop gives them good performance.
The requirements for field or plan review are recommended to be moved to the Code Commentary section. Modifications were made to these provisions and specificity was added for clarity. The proposed new language is presented below.

Recommended for inclusion in the commentary:

R408.2.3.1 Compact hot water distribution systems. The purpose of a compact hot water distribution system is to minimize the volume in the piping between the sources of hot water and the uses of hot water. Sources of hot water include water heaters, circulating water systems and heat trace temperature maintenance systems. There are many ways to meet the requirements as long as the maximum volume between the source and the use is not exceeded.

To verify compliance with R408.2.3.1

1. *Construction documents* shall indicate the lengths, diameters and ounces of water in the piping between the sources of heated water and the termination of the fixture supply.

2. At plumbing rough-in, compare the length and diameter of the piping from the sources of heated water to the termination of the fixture supply pipes to those contained in the *construction documents*.

3. At final inspection verify that either:

a. No more than 32 ounces of water comes out of the fixtures before the temperature of the water rises above 105F.

b. No more than 20 ounces of water shall come out of the fixtures before the temperature of the water rises 10F above the ambient water temperature.

c. If there is a *demand recirculation water system* or a heat trace system, ensure that these are primed with hot water prior to verifying the volume.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
The changes that have been proposed clarify the language, but do not add provisions, so there is no impact on construction costs.

Bibliography: none

Workgroup Recommendation

The workgroup recommends moving all the provisions related to compact hot water distribution systems to Section 408. This recommendation incorporates language from RED1-311 and RED1-312 (the pipe volume table) into this one proposal. Have tried to align language with other sections in R408.

Delete as follows:

~~R403.5.4 Water volume determination. The water volume in the piping between a source of heated water and the termination of a fixture supply shall be calculated in accordance with this section. Water heaters, circulating water systems and heat trace temperature maintenance systems shall be considered to be sources of heated water. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the nearest source of heated water and the termination of the fixture supply pipe. The volume in the piping shall be determined from Table R403.5.4. The volume contained within fixture shutoff valves, within flexible water supply connectors to a fixture fitting and within a fixture fitting shall not be included in the water volume determination. Where heated water is supplied by a recirculating system or heat-traced piping, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.~~

Revise as follows:

R408.2.3 Reduced energy use in service water-heating options. For measure numbers R408.2.3 (1) through R408.2.3 (5), the hot water system shall meet one of the Uniform Energy Factors (UEF) or Solar Uniform Energy Factors (SUEF): in Table R408.2.3. For measure number R408.2.3 (6), ~~the~~ a compact hot water distribution system shall comply with R408.2.3.1.

~~To field or plan review verify that the system meets the prescribed limit, one of the following must be done:~~

~~**1.** At plan review, referencing ounces of water per foot of tube on plans as per Table R403.5.4.~~
~~**2.** At rough in (plumbing), referencing ounces of water per foot of tube installed as per Table R403.5.4.~~
~~**3.** At final inspection. In accordance with Department of Energy's Zero Energy Ready Home National Specification (Rev. 07 or higher) footnote on Hot water delivery systems.~~

R408.2.3.1 Compact hot water distribution system ~~credit~~ option. ~~For Compact Hot Water Distribution To claim the compact hot water distribution system credit, the volume~~ The pipe shall store not more than 16 ounces of water ~~in~~ between the nearest source of heated water and the termination of the fixture supply pipe when calculated using section R403.5.4. Where the source of heated water is a circulation loop, the loop shall be primed with a *demand recirculation water system*. There shall be a dedicated return line for the loop that begins after the branch to the last fixture on the supply portion of the loop and runs back to the water heater. ~~When the hot water source is the nearest primed plumbing loop or trunk, this must be primed with an on-demand recirculation pump and must run a dedicated ambient return line from the furthest fixture or end of loop to the water heater. In order to claim this credit, the dwelling must have a minimum of 1.5 bathrooms.~~

~~To field or plan review, verify that the system meets the prescribed limit, one of the following must be done:~~

~~**1.** At plan review, referencing ounces of water per foot of tube on plans as per Table R403.5.4.1~~
~~**2.** At rough in (plumbing), referencing ounces of water per foot of tube installed as per Table R403.5.4.1~~
~~**3.** At final inspection, in accordance with Department of Energy's Zero Energy Ready Home National Specification (Rev. 07 or higher) footnote on Hot water delivery systems.~~

R408.2.3.1.1 Water volume determination. The water volume in the piping between a source of heated water and the termination of a fixture supply shall be calculated in accordance with this section. Water heaters, circulating water systems and heat trace temperature maintenance systems shall be considered to be sources of heated water. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the nearest source of heated water and the termination of the fixture supply pipe. The volume in the piping shall be determined from Table ~~R403.5.4~~ R408.2.3.1. The volume contained within fixture shutoff valves, within flexible water supply connectors to a fixture fitting and within a fixture fitting shall not be included in the water volume determination. Where heated water is supplied by a recirculating system or heat-traced piping, the volume shall include the portion of the fitting on the branch pipe that supplies water to the fixture.

TABLE ~~R403.5.4~~ R408.2.3.1 INTERNAL VOLUME OF VARIOUS WATER DISTRIBUTION TUBING

OUNCES OF WATER PER FOOT OF TUBE									
NOMINAL SIZE (inches)	**COPPER TYPE M**	**COPPER TYPE L**	**COPPER TYPE K**	**CPVC CTS SDR 11**	**CPVC SCH 40**	**CPVC SCH 80**	**PE-RT SDR 9**	**COMPOSITE ASTM F1281**	**PEX CTS SDR 9**
3/8	1.06	0.97	0.84	N/A	1.17	-	0.64	0.63	0.64
1/2	1.69	1.55	1.45	1.25	1.89	1.46	1.18	1.31	1.18
3/4	3.43	3.22	2.90	2.67	3.38	2.74	2.35	3.39	2.35
1	5.81	5.49	~~5.19~~ 5.17	4.43	5.53	4.57	3.91	5.56	3.91
1 1/4	8.70	8.36	8.09	6.61	9.66	8.24	5.81	8.49	5.81
1 1/2	12.18	11.83	11.45	9.22	13.20	11.38	8.09	13.88	8.09
2	21.08	20.58	20.04	15.79	21.88	19.11	13.86	21.48	13.86

For SI: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 liquid ounce = 0.030L, 1 oz/ft^2 = 305.15 g/m^2. NA=not applicable.

Reason: Minor edits were made to the language which clarify the requirements. This public comment removes the minimum requirement of 1.5 bathrooms to claim this credit. If there is only one bathroom, a kitchen and perhaps a laundry room, they could be close to each other and to the water heater or far from each other and the water heater, or one could be close and the other far. The intent of the credit is to encourage the architect to get the fixtures close to the water heater(s). If this is somehow not possible, then installing an on-demand primed circulation loop gives them good performance.

The requirements for field or plan review that were deleted from the code section are recommended to be moved to the Code Commentary section. Modifications were made to these provisions and specificity was added for clarity. The proposed new language for inclusion in the commentary is presented below.

Recommended for inclusion in the commentary:

R408.2.3.1 Compact hot water distribution systems. The purpose of a compact hot water distribution system is to minimize the volume in the piping between the sources of hot water and the uses of hot water. Sources of hot water include water heaters, circulating water systems and heat trace temperature maintenance systems. There are many ways to meet the requirements as long as the maximum volume between the source and the use is not exceeded.

To verify compliance with R408.2.3.1

1. *Construction documents* shall indicate the lengths, diameters and ounces of water in the piping between the sources of heated water and the termination of the fixture supply.

2. At plumbing rough-in, compare the length and diameter of the piping from the sources of heated water to the termination of the fixture supply pipes to those contained in the *construction documents*.

3. At final inspection verify that either:

1. No more than 32 ounces of water comes out of the fixtures before the temperature of the water rises above 105F.
2. No more than 20 ounces of water shall come out of the fixtures before the temperature of the water rises 10F above the ambient water temperature.
3. Where there is a *demand recirculation water system* or a heat trace system, ensure that these are primed with hot water prior to verifying the volume.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
The changes that have been proposed clarify the language, but do not add provisions, so there is no impact on construction costs.

Bibliography: none

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-311-22 Water volume determination
CDP ID #	1449
Code	IECC RE
Code Section(s)	R403.5.4
Location	base
Proponent	Mary Koban mkoban@ahrinet.org
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Water heating working group motion to deny by the Chair of the working group. Recommendation is to roll RED1-311 and 312 into Red1-313-22
Recommendation	Subcommittee motion to disapprove
Vote	9/0/0
Recommendation Date	3/13/2023
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 #	RED1-319-22 HRV/ERV in climate zone 5
CDP ID #	1359
Code	IECC RE
Code Section(s)	R403.6.1
Location	base
Proponent	Shane Hoeper shoeper@cityofdubuque.org
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Discussion opened with a motion to approve and a second. Floor open to discussion. First round of this cycle the discussion centered around the proposal was not cost effective in climate zone 5. Social cost of carbon came up and after much discussion the request to call the question was submitted. Vote to approve failed with the Chair breaking the tie vote count 4/5/2 Motion to table and a second – Motion to table failed 4/5/1. Motion to disapprove with a second was successful. After a lot of discussion this motion carried with the subcommittee voting to disapprove with the main reason the proposal is not cost effective in climate zone 5.
Recommendation	Subcommittee vote is to disapprove
Vote	7/3/0
Recommendation Date	3/13/2023
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 #	RED1-340-22 Fuel type in table
CDP ID #	1309
Code	IECC RE
Code Section(s)	R405.4.2(1) Table
Location	base
Proponent	Shannon Corcoran SCorcoran@aga.org
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Proponent presented the proposal and discussion was opened with a motion to approve and a second. Change code section R405.4.2(1). Proposal is to change the language from non electric to gasses listed. Question came up regarding bio fuels. A few clarification questions.
Recommendation	Subcommittee voted to approve (as modified) ~~Non-electric~~ Natural gas, propane and fuel oil furnaces: Complying with 10 CFR §430.32 ~~Non-electric~~ Natural gas, propane and fuel oil boilers: Complying with 10 CFR §430.32
Vote	8/0/1
Recommendation Date	3/13/2023
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 #	RED1-292-22 Heat pump supplementary heat edit
CDP ID #	1321
Code	IECC RE
Code Section(s)	R403.1.2
Location	base
Proponent	Adam Berry adam.berry@state.co.us
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Discussion opened after proponent Adam Berry presented. A motion and a second to approve. Technical discussion centered around Dual fuel systems and understanding the proposal. After some discussion the subcommittee voted to approve.
Recommendation	Subcommittee having voted to approve
Vote	8/1/0
Recommendation Date	3/13/2023
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 #	RED1-289-22 Grid integrated thermostats
CDP ID #	1418
Code	IECC RE
Code Section(s)	R403.1
Location	base
Proponent	Ben Rabe ben@newbuildings.org
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Upon hearing the proposal from the proponent, a subcommittee member made a motion to disapprove with a proper second. After some discussion the motion on the floor was called to vote. Vote is to disapprove.
Recommendation	Subcommittee recommendation is to disapprove
Vote	6/1/3
Recommendation Date	3/13/2023
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 #	RED1-330-22 High efficacy lighting and range hood except
CDP ID #	1472
Code	IECC RE
Code Section(s)	R404.1
Location	base
Proponent	Mike Moore mmoore@statorllc.com
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Mike Moore presented his proposal and the subcommittee members issued a motion to approve with a second. Multiple members and interested parties spoke in favor of this proposal. Note to ELPR Electrification subcommittee- HVACR and the proponent would like for your subcommittee to hear this proposal – Email thread from Steve Rosenstock has a proposal with ELPR RED1-109-22. Steve's comment is to have ELPR hear proposal RED1-330-22 before RED1-109-22 is heard. Chair Hensley asked to make this request from the subcommittee and Proponents.
Recommendation	Subcommittee recommendation is to approve "as modified"
Vote	8/0/1
Recommendation Date	2/27/2023
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____
Consensus Committee	
Committee Response	

Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-330-22

Replace the original proposal with the following:

N1104.1 (R404.1) Lighting equipment. All permanently installed luminaires shall be capable of operation with an efficacy of not less than 45 lumens per watt or shall contain lamps capable of operation ~~at~~ with an efficacy of not less than 65 lumens per watt ~~or greater~~.

Exceptions:
1. ~~kitchen appliance lighting~~ appliance lamps.
2. antimicrobial lighting used for the sole purpose of disinfecting.
3. general service lamps complying with DOE 10 CFR 430.32.
4. luminaires with a rated electric input of not greater than 3.0 watts.

Reason: DOE recently established minimum efficacy requirements for "general service lamps" within 10 CFR 430.32, at 45 lumens/watt. Presumably, an IECC requirement for efficacy that differs from the federal requirement qualifies as a preemption of federal law, which is illegal. If the IECC contains provisions that violate federal law, its adoption can be expected to be challenged. Citing this reason, jurisdictions may opt to skip this version of the code entirely. These proposed modifications are intended to avoid this outcome by aligning this section with federal law. Additionally, exception 1 is modified to except "appliance lamps," which are exempted from the definition of "general service lamps" (and their associated minimum efficacy requirements) in 10 CFR 430.32, presumably because of challenges with specifying high-efficacy lamps in high-temperature environments, and/or the extensive paybacks associated with their specification.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-280-22 PI & II Zonal heating
CDP ID #	1115
Code	IECC RE
Code Section(s)	Chapter 2
Location	base
Proponent	Fredric Zwerg fredric.zwerg@swgas.com
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Discussion started with a motion and a second to approve. Referenced in discussion REPI-099 supporting approval. Another reference is the approval of RED1-325. After a small amount of discussion, the subcommittee voted to approve. This proposal is Part 1 of two parts.
Recommendation	The subcommittee motion is to approve
Vote	9/0/0
Recommendation Date	3/13/2023
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 #	RED1-281-22 ASTM standard update
CDP ID #	1367
Code	IECC RE
Code Section(s)	Chapter 6
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Proponent presented the proposal and the subcommittee responded with a motion and a second to approve as submitted. Very little discussion with no negative comments.
Recommendation	The subcommittee recommendation is to approve as submitted.
Vote	8/0/0
Recommendation Date	2/27/2023
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 #	RED1-334-22 Gas supply tubing
CDP ID #	1485
Code	IECC RE
Code Section(s)	R404.5
Location	base
Proponent	Ted Williams ngdllc@outlook.com
Proposal Status	SC rev
Subcommittee	RE HVACR & WH
Subcommittee Notes	Proponent presented the proposal and the subcommittee responded with a motion and a second to disapprove. Discussion against called out the proposal requires stainless piping (mainly one manufacturer). Greg Johnson was in favor of the proposal but stated he did think this needs to be in the gas code rather than IECC and IRC. One member stated this proposal is not ready. Another interested party also stated this proposal should be in the gas code not IECC and IRC.
Recommendation	Subcommittee vote recommends disapproval
Vote	9/0/0
Recommendation Date	2/27/2023
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 #	RED1-335-22 Water heater editorial changes
CDP ID #	1188
Code	IECC RE
Code Section(s)	R404.5.3
Location	base
Proponent	Shane Hoeper shoeper@cityofdubuque.org
Proposal Status	SC rev
Subcommittee	
Subcommittee Notes	This proposal proposes an editorial change the R404.5.3. Discussion opened with a motion and a second to approve. Discussion centered around whether the proposal is needed. Additional discussion regarding central systems. One member of the subcommittee said the editorial change is not needed. Vote to approve carried and the subcommitee motion is to approve.
Recommendation	Motion to approve
Vote	6/4/0
Recommendation Date	3/13/2023
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 #	RED1-189-22 Emittance
CDP ID #	1223
Code	IECC RE
Code Section(s)	R202
Location	base
Proponent	Christopher McWhite cmcwhite@me.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	SC approves second time
Recommendation	Clarifies the term consistent with the ways in which it is used throughout the code and other standards.
Vote	11-1-3 approval
Recommendation Date	3/22/23
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 #	IRCED1-7-22 Air leakage testing exception edit
CDP ID #	1319
Code	IRC
Code Section(s)	N1102.5.1.2
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Unanimous approval
Recommendation	This proposal removes left over language from another proposal that does not makes sense.
Vote	16-0-0 for approval
Recommendation Date	3/22/23
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 #	RED1-238-22 Multi-unit testing
CDP ID #	1305
Code	IECC RE
Code Section(s)	R402.5.1.2
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Committee disagree with referring to Commercial section and believes there may be better method of address proponents concerns.
Vote	10-4-2 for disapproval
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee__X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

Modification to RED1-238-NOT HEARD BY SUBCOMMITTEE

Replace the RED1-238 with the following proposal:

R402.5.1.4 Dwelling unit sampling. For buildings with eight or more dwelling units, the greater of seven or 20 percent of the dwelling units in the building shall be tested. Tested units shall include a top floor unit, a ground floor unit, a middle floor unit, and the dwelling unit with the largest dwelling unit enclosure area. Where the air leakage rate of a tested unit is greater than the maximum permitted air leakage rate, corrective actions shall be made to the unit and the unit re-tested. For each tested unit that has a greater air leakage rate than the maximum permitted air leakage rate, an additional three units, including the corrected unit, shall be tested. Where buildings have fewer than eight dwelling units, each dwelling unit shall be tested. Corridors, stairwells, and enclosed spaces other than dwelling units having a conditioned floor area greater than 1,500 ft (139 m2) and not less than one exterior wall in the *building thermal envelope* shall be tested.

Reason:

The Envelope Sub-committee's reason for disapproval stated that "The Committee disagrees with referring to Commercial section and believes there may be better method of address proponents concerns." This modification addresses my concerns that the residential air leakage testing & sampling procedures did not include the testing of common areas (non-dwelling units) in residential multi-family buildings. The lack of air leakage testing of common areas was identified as a concern during the sub-committee discussion.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-237-22 Editorial revisions
CDP ID #	1205
Code	IECC RE
Code Section(s)	R402.5.1.2
Location	base
Proponent	Hendrik Shank hendrikus.shank@dos.ny.gov
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Unanimous approval
Recommendation	Editorial modifications consistent with the intent of the applicable section and terminology.
Vote	15-0-0 for approval
Recommendation Date	3/22/23
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 #	RED1-184-22 PI move during testing
CDP ID #	1318
Code	IECC RE
Code Section(s)	N1102.5.1.2
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Voted with PII, approved unanimously
Recommendation	Helpful re-organization placing requirements above the exception.
Vote	17-0-0
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-224-22 PI & II Air leakage edits
CDP ID #	1286
Code	IECC RE
Code Section(s)	R402.5.1
Location	base
Proponent	Theresa Weston holtweston88@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Voted with PII
Recommendation	Improves the clarity of the code by clearly separating test protocols from maximum air leakage rate criteria.
Vote	13-2-0 approve as modified
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-224-22 Part I (As Modified, REPLACES MONOGRAPH file, red text shows changes)

IECC: R402.5.1, R402.5.1.2, R402.5.1.3 (New), R402.5.1.3, R402.5.1.4

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

2024 International Energy Conservation Code [RE Project]

Revise as follows:

R402.5.1 Building thermal envelope. The building thermal envelope shall comply with Sections R402.5.1.1 through R402.5.1.~~3.~~ The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

R402.5.1.2 Air Leakage Testing. The building or each dwelling unit in the building shall be tested for air leakage. ~~The maximum air leakage rate for any building or dwelling unit under any compliance path shall not exceed 4.0 air changes per hour or 0.22 cfm/ft (1.1 L/s x m) of building or dwelling unit enclosure area.~~ Testing shall be conducted in accordance with ANSI/RESNET/ICC 380, ASTM E779, ASTM E1827 or ASTM E3158 and reported at a pressure differential of 0.2 inch water gauge (50 Pa). Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope have been sealed.

Exceptions:

~~1. When testing individual dwelling units, an air leakage rate not exceeding 0.27 cubic feet per minute per square foot [1.35 L/s x m)] of the dwelling unit enclosure area, tested in accordance with ANSI/RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g. (50 Pa), shall be permitted in all climate zones for:~~

~~1.1 Attached single and multiple family building dwelling units.~~

~~1.2 Buildings or dwelling units that are 1,500 square feet (139.4 m^2) or smaller.~~

~~2.~~ 1. For heated, attached private garages and heated, detached private garages accessory to one- and two-family dwellings and townhouses not more than three stories above grade plane in height, building envelope tightness and insulation installation shall be considered acceptable where the items in Table R402.5.1.1, applicable to the method of construction, are field verified. Where required by the code official, an approved third party independent from the installer shall inspect both air barrier and insulation installation criteria. Heated, attached private garage space and heated, detached private garage space shall be thermally isolated from all other habitable, conditioned spaces in accordance with Sections R402.2.13 and R402.4.5, as applicable.

~~3.~~ 2. Where tested in accordance with R402.5.1.~~4,~~ testing of each dwelling unit is not required.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.

3. Interior doors, where installed at the time of the test, shall be open.

4. Exterior or interior terminations for continuous ventilation systems shall be sealed.

5. Heating and cooling systems, where installed at the time of the test, shall be turned off.

6. Supply and return registers, where installed at the time of the test, shall be fully open.

Mechanical ventilation shall be provided in accordance with Section M1505 of the International Residential Code or Section 403.3.2 of the *International Mechanical Code*, as applicable, or with other approved means of ventilation.

Modify proposal as follows:

~~**R402.5.1.3 Mandatory Air Leakage.** The maximum air leakage rate for any building or dwelling unit under any compliance path shall not exceed 4.0 air changes per hour or 0.22 cfm/ft (1.1 L/s x m) of building or dwelling unit enclosure area.~~

> ~~**Exception:** When testing individual dwelling units, an air leakage rate not exceeding 0.27 cubic feet per minute per square foot [1.35 L/s x m2)] of the dwelling unit enclosure area and reported at a pressure of 0.2 inch w.g. (50 Pa), shall be permitted in all climate zones for:~~
>
> ~~1. Attached single and multiple family building dwelling units.~~
>
> ~~2. Buildings or dwelling units that are 1,500 square feet (139.4 m^2) or smaller.~~

~~**R402.5.1.34 Prescriptive air leakage rate.** When complying with Section R401.2.1, the building or each dwelling unit in the building shall have an air leakage rate not exceeding 5.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8, when tested in accordance with Section R402.5.1.2.~~

R402.5.1.3 Maximum air leakage rate. Where tested in accordance with Section R402.5.1.2, the air leakage rate for *buildings* or *dwelling units* shall be as follows:

1. Where complying with Section R401.2.1, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8.
2. Where complying with Section R401.2.2 or R401.2.3, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour, or 0.22 cfm/ft^2 (1.1 L/s x m^2) of the *building thermal envelope* area or *dwelling unit enclosure area*, as applicable.

Exceptions:

1. Where dwelling units are attached or located in an R-2 occupancy, the air leakage rate is permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2) of the *dwelling unit enclosure area.*
2. Where buildings have 1,500 square feet (139.4 m^2) or less of *conditioned floor area*, the air leakage rate is permitted to be not be greater than 0.27 cfm/ft^2 (1.35 L/s x m^2).

R402.5.1.4 Dwelling unit sampling. For buildings with eight or more dwelling units, the greater of seven or 20 percent of the dwelling units in the building shall be tested. Tested units shall include a top floor unit, a ground floor unit, a middle floor unit, and the dwelling unit with the largest dwelling unit enclosure area. Where the air leakage rate of a tested unit is greater than the maximum permitted air leakage rate, corrective actions shall be made to the unit and the unit re-tested. For each tested unit that has a greater air leakage rate than the maximum permitted air leakage rate, an additional three units, including the corrected unit, shall be tested. Where buildings have fewer than eight dwelling units, each dwelling unit shall be tested.

SECTION R405
SIMULATED BUILDING PERFORMANCE

Revise as follows:

TABLE R405.2 REQUIREMENTS FOR SIMULATED BUILDING PERFORMANCE

Portions of table not shown remain unchanged.

SECTION[a]	TITLE
Building Thermal Envelope	
R402.5.1.1	Installation
R402.5.1.2	Testing
R402.5.1.3	Maximum air leakage rate

SECTION R406
ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

Revise as follows:

TABLE R406.2 REQUIREMENTS FOR ENERGY RATING INDEX

Portions of table not shown remain unchanged.

SECTION[a]	TITLE
Building Thermal Envelope	
R402.5.1.1	Installation
R402.5.1.2	Testing
R402.5.1.3	Maximum air leakage rate

RED1-224-22 Part II (As Modified, REPLACES MONOGRAPH file, red text shows changes)

IRCECC: N1102.5.1, N1102.5.1.2, N1102.5.1.3 (New), N1102.5.1.3

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

2024 ENERGY Chapter11

Revise as follows:

N1102.5.1 Building thermal envelope. The building thermal envelope shall comply with Sections N1102.5.1.1 through N1102.5.1.~~3~~ ~~4~~ 3. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

N1102.5.1.2 Air Leakage Testing ~~and maximum air leakage rate~~. The *building* or each *dwelling unit* in the building shall be tested for air leakage. ~~The maximum air leakage rate for any building or dwelling unit under any compliance path shall not exceed 4.0 air changes per hour or 0.22 cfm/ft (1.1 L/s x m) of building or dwelling unit enclosure area.~~ Testing shall be conducted in accordance with ANSI/RESNET/ICC 380, ASTM E779, ASTM E1827 or ASTM E3158 and reported at a pressure differential of 0.2 inch water gauge (50 Pa). Where required by the code official, testing shall be conducted by an approved third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope* have been sealed.

Exceptions:

~~1. When testing individual dwelling units, an air leakage rate not exceeding 0.27 cubic feet per minute per square foot [1.35 L/s x m] of the dwelling unit enclosure area, tested in accordance with ANSI/RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch water gauge (50 Pa), shall be permitted in all climate zones for:~~

~~1.1 Attached single and multiple family building dwelling units.~~

~~1.2 Buildings or dwelling units that are 1,500 square feet (139.4 m) or smaller.~~

~~2.~~ 1. For heated, attached private garages and heated, detached private garages accessory to one- and two-family dwellings and townhouses not more than three stories above grade plane in height, building envelope tightness and insulation installation shall be considered acceptable where the items in Table N1102.5.1.1, applicable to the method of construction, are field verified. Where required by the code official, an approved third party independent from the installer shall inspect both air barrier and insulation installation criteria. Heated, attached private garage space and heated, detached private garage space shall be thermally isolated from all other conditioned spaces in accordance with Sections N1102.2.13 and N1102.4.5, as applicable.

~~3.~~ 2. Where tested in accordance with N1102.5.1.2, testing of each dwelling unit is not required.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.

3. Interior doors, where installed at the time of the test, shall be open.

4. Exterior or interior terminations for continuous ventilation systems shall be sealed.

5. Heating and cooling systems, where installed at the time of the test, shall be turned off.

6. Supply and return registers, where installed at the time of the test, shall be fully open.

Mechanical ventilation shall be provided in accordance with Section M1505 of this code or Section 403.3.2 of the International Mechanical Code, as applicable, or with other approved means of ventilation.

Modify Proposal as follows:

~~**N1102.5.1.3 Mandatory Air Leakage.** The maximum air leakage rate for any building or dwelling unit under any compliance path shall not exceed 4.0 air changes per hour or 0.22 cfm/ft (1.1 L/s x m) of building or dwelling unit enclosure area.~~

> ~~**Exception:** When testing individual dwelling units, an air leakage rate not exceeding 0.27 cubic feet per minute per square foot [1.35 L/s x m] of the dwelling unit enclosure area,reported at a pressure of 0.2 inch water gauge (50 Pa), shall be permitted in all climate zones for:~~
>
> ~~1. Attached single and multiple family building dwelling units.~~
>
> ~~2. Buildings or dwelling units that are 1,500 square feet (139.4 m) or smaller.~~

~~**N1102.5.1.3 4 Prescriptive air leakage rate.** Where complying with Section N1101.13.1, the building or each dwelling unit in the building shall have an air leakage rate not exceeding 5.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8, when tested in accordance with Section N1102.5.1.2.~~

N1102.5.1.3 Maximum air leakage rate. Where tested in accordance with Section N1102.5.1.2, the air leakage rate for *buildings* or *dwelling units* shall be as follows:

1. Where complying with Section N1101.13.1, the *building* or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8.
2. Where complying with Section N1101.13.2 or N1101.13.3, the *building* or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour, or 0.22 cfm/ft^2 (1.1 L/s x m^2) of the *building thermal envelope* area or *dwelling unit enclosure area*, as applicable.

Exceptions:

1. Where *dwelling units* are attached, the air leakage rate is permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2) of the *dwelling unit enclosure area.*
2. Where buildings have 1,500 square feet (139.4 m^2) or less of *conditioned floor area*, the air leakage rate is permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2).

SECTION 1105 (R405)
SIMULATED BUILDING PERFORMANCE

Revise as follows:

TABLE N1105.2 REQUIREMENTS FOR SIMULATED BUILDING PERFORMANCE

Portions of table not shown remain unchanged.

SECTION[a]	**TITLE**
Building Thermal Envelope	
N1102.5.1.1	Installation
N1102.5.1.2	Testing
N1102.5.1.3	Maximum air leakage rate

SECTION 1106 (R406)
ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

Revise as follows:

TABLE N1106.2 REQUIREMENTS FOR ENERGY RATING INDEX

Portions of table not shown remain unchanged.

SECTION[a]	**TITLE**
Building Thermal Envelope	
N1102.5.1.1	Installation
N1102.5.1.2	Testing
N1102.5.1.3	Maximum air leakage rate

****

Reason for modification (parts 1 & 2): There were several proposals that sought to simplify, and create a more logical organization of the air leakage testing section of the code. Proponents met in as a task group and are presenting a combined modified proposal. This modified proposal does the following:

- Separates the maximum air leakage rate from the test method section by moving the existing language into a new revised “maximum air leakage” section.
- Creates a new revised “maximum air leakage” section which includes in a logical organization the maximum air leakage levels for each separate compliance pathways.

This modified proposal seeks a more logical organization of the code. It only updates the organization of the code and does not change technical requirements or remove any exceptions.

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

This modified proposal does not change requirements but only reorganizes the code for readability and clarity.

MODIFICATION 2

RED1-224-22 Part I & II (A MODIFICATION beyond the MOD approved by Envelope SC, to both Part I & II)

IECC: R402.5.1, R402.5.1.2, R402.5.1.3 (New), R402.5.1.3, R402.5.1.4

Proponents: Gayathri Vijayakumar

2024 International Energy Conservation Code [RE Project]

Further modify RED1-224 Part I and II as follows:

R402.5.1.3 Maximum air leakage rate. Where tested in accordance with Section R402.5.1.2, the air leakage rate for *buildings* or *dwelling units* shall be as follows:

3. Where complying with Section R401.2.1, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8.
4. Where complying with Section R401.2.2 or R401.2.3, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour, or 0.22 cfm/ft^2 (1.1 L/s x m^2) of the *building thermal envelope* area or *dwelling unit enclosure area*, as applicable.

Exceptions:

3. Where dwelling units are attached or located in an R-2 occupancy, and are tested without simultaneously testing adjacent *dwelling units,* the air leakage rate is permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2) of the *dwelling unit enclosure area.* Where adjacent *dwelling units* are simultaneously tested in accordance with ASTM E779, the air leakage rate is permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2) of the *dwelling unit enclosure area* that separates *conditioned space* from the exterior.
4. Where buildings have 1,500 square feet (139.4 m^2) or less of *conditioned floor area*, the air leakage rate is permitted to be not be greater than 0.27 cfm/ft^2 (1.35 L/s x m^2).

MODIFICATION 3

RED1-224-22 Part I and II (A MODIFICATION beyond the MOD approved by Envelope SC, to both Part I & II)

IECC: R402.5.1, R402.5.1.2, R402.5.1.3 (New), R402.5.1.3, R402.5.1.4

Proponents: Gayathri Vijayakumar

2024 International Energy Conservation Code [RE Project]

Further modify RED1-224 Part I and II as follows:

R402.5.1.3 Maximum air leakage rate. Where tested in accordance with Section R402.5.1.2, the air leakage rate for *buildings* or *dwelling units* shall be as follows:

5. Where complying with Section R401.2.1, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour in Climate Zones 0, 1 and 2, 3.0 air changes per hour in Climate Zones 3 through 5, and 2.5 air changes per hour in Climate Zones 6 through 8.
6. Where complying with Section R401.2.2 or R401.2.3, the building or *dwelling units* in the building shall have an air leakage rate not greater than 4.0 air changes per hour, or 0.20 ~~0.22~~ cfm/ft^2 (1.1 L/s x m^2) of the *building thermal envelope* area or *dwelling unit enclosure area*, as applicable.

Exceptions:

5. Where dwelling units are attached or located in an R-2 occupancy, the air leakage rate shall be permitted to be not greater than 0.27 cfm/ft^2 (1.35 L/s x m^2) of the *dwelling unit enclosure area.*
6. Where buildings have 1,500 square feet (139.4 m^2) or less of *conditioned floor area*, the air leakage rate shall be permitted to be not be greater than ~~0.27~~ 0.23 cfm/ft^2 (1.35 L/s x m^2).

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-222-22 Air leakage revision
CDP ID #	1165
Code	IECC RE
Code Section(s)	R402.5
Location	base
Proponent	Gayathri Vijayakumar gayathri@swinter.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Unanimously approved
Recommendation	Part B. Most of the content of the proposal had already been approved by prior action. The modifications improve the language and add clarity.
Vote	14-0-0
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-222-22 Modification

Notes: The red text is all that remains of RED1-222. All other edits in the monograph are removed in this modification. Edits in black underline/strikeout are from RED1-184 or 224 (shown here just for context).

IECC: CHAPTER 4 [RE], SECTION R402, R402.5, R402.5.1, R402.5.1.2, R402.5.1.2.1 (New), R402.5.1.3, R402.5.1.4, R403.6, SECTION R405, TABLE R405.2, SECTION R406, TABLE R406.2

Proponents:
Gayathri Vijayakumar, representing Steven Winter Associates, Inc. (gvijayakumar@swinter.com)

2024 International Energy Conservation Code [RE Project]

CHAPTER 4 [RE]
RESIDENTIAL ENERGY EFFICIENCY

SECTION R402
BUILDING THERMAL ENVELOPE

Revise as follows:

R402.5.1.2 Air Leakage Testing. The *building* or each *dwelling unit* in the building shall be tested for air leakage. ~~The maximum air leakage rate for any *building* or *dwelling unit* under any compliance path shall not exceed 4.0 air changes per hour or 0.22 cfm/ft^2 (1.1 L/s x m^2) of building or dwelling unit enclosure area.~~ Testing shall be conducted in accordance with ANSI/RESNET/ICC 380, ASTM E779, ASTM E1827 or ASTM E3158 and reported at a pressure differential of 0.2 inch water gauge (50 Pa). Where required by the *code official*, testing shall be conducted by an *approved* third party. A written report of the results of the test shall be signed by the party conducting the test and provided to the *code official*. Testing shall be performed at any time after creation of all penetrations of the *building thermal envelope* have been sealed.

During testing:

1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.

2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.

3. Interior doors, where installed at the time of the test, shall be open.

4. Exterior or interior terminations for continuous ventilation systems shall be sealed.

5. Heating and cooling systems, where installed at the time of the test, shall be turned off.

6. Supply and return registers, where installed at the time of the test, shall be fully open.

Exceptions:

~~1. When testing individual dwelling units, an air leakage rate not exceeding 0.27 cubic feet per minute per square foot [1.35 L/s x m^2)] of the dwelling unit enclosure area, tested in accordance with ANSI/RESNET/ICC 380, ASTM E779 or ASTM E1827 and reported at a pressure of 0.2 inch w.g. (50 Pa), shall be permitted in all climate zones for:~~

1.1. ~~Attached single and multiple family building dwelling units.~~

1.2. ~~Buildings or dwelling units that are 1,500 square feet (139.4 m^2) or smaller.~~

~~2.~~ 1. For heated, attached private garages and heated, detached private garages accessory to one- and two-family dwellings and townhouses not more than three stories above grade plane in height, building envelope tightness and insulation installation shall be considered acceptable where the items in Table R402.5.1.1, applicable to the method of construction, are field verified. Where required by the code official, an approved third party independent from the installer shall inspect both air barrier and insulation installation criteria. Heated, attached private garage space and heated, detached private garage space shall be thermally isolated from all other habitable, conditioned spaces in accordance with Sections R402.2.13 and R402.4.5, as applicable.

~~3.~~ 2. Where tested in accordance with R402.5.1.2.1 ~~R402.5.1.4~~, testing of each *dwelling unit* is not required.

~~During testing:~~

~~1. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.~~

~~2. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.~~

~~3. Interior doors, where installed at the time of the test, shall be open.~~

~~4. Exterior or interior terminations for continuous ventilation systems shall be sealed.~~

~~5. Heating and cooling systems, where installed at the time of the test, shall be turned off.~~

~~6. Supply and return registers, where installed at the time of the test, shall be fully open.~~

~~Mechanical ventilation shall be provided in accordance with Section M1505 of the *International Residential Code* or Section 403.3.2 of the *International Mechanical Code*, as applicable, or with other *approved* means of ventilation.~~

Revise as follows:

~~R402.5.1.4~~ R402.5.1.2.1 Dwelling unit sampling. For buildings with eight or more *dwelling units*, ~~the greater of~~ seven or 20 percent of the *dwelling units*, whichever is greater, ~~in the building~~ shall be tested. Tested units shall include a top floor unit, a ground floor unit, a middle floor unit, and the *dwelling unit* with the largest *dwelling unit enclosure area*. Where the air leakage rate of a tested unit is greater than the maximum permitted ~~air leakage~~ rate, corrective actions shall be taken ~~made to the unit~~ and the unit shall be re-tested until it passes. For each tested *dwelling unit* with ~~that has~~ an ~~greater~~ air leakage rate greater than the maximum permitted ~~air leakage~~ rate, ~~an additional~~ three additional units, including the corrected unit, shall be tested. Where buildings have fewer than eight *dwelling units*, each *dwelling unit* shall be tested.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-186-22 Replace Total UA with thermal conductance
CDP ID #	1157
Code	IECC RE
Code Section(s)	R102.1.1
Location	base
Proponent	Gayathri Vijayakumar gayathri@swinter.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Makes needed editorial changes capturing instances where the term UA should have been corrected without introducing unintended consequences
Vote	13-0-1 approve as modified
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-186-22 MOD

Proponents: Gayathri Vijayakumar, representing Steven Winter Associates, Inc. (gvijayakumar@swinter.com)

2024 International Energy Conservation Code [RE Project]

SECTION R102
ALTERNATIVE MATERIALS, DESIGN AND METHODS OF CONSTRUCTION AND EQUIPMENT

Revise as follows:

R102.1.1 Above code programs. The *code official* or other authority having jurisdiction shall be permitted to deem a national, state or local energy-efficiency program to exceed the energy efficiency required by this code. *Buildings approved* in writing by such an energy-efficiency program shall be considered to be in compliance with this code where such buildings also meet the requirements identified in Table R405.2 and the proposed total *building thermal envelope* thermal conductance *TC*~~UA, which is the sum of U-factor times assembly area,~~ shall be less than or equal to the total *building thermal envelope* thermal conductance TC ~~UA~~ using the prescriptive U-factors and F-factors from Table R402.1.2 multiplied by 1.08 in Climate Zones 0, 1, 2, and by 1.15 in Climate Zones 3 through 8, in accordance with Equation 4-1. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

For Climate Zones 0-2: $TC_{UA_{Proposed\ design}} \leq 1.08 \times TC_{UA_{Prescriptive\ reference\ design}}$ **(Equation 4-1)**

For Climate Zones 3-8: $TC_{UA_{Proposed\ design}} \leq 1.15 \times TC_{UA_{Prescriptive\ reference\ design}}$ **(Equation 4-1)**

Staff note: 4-2

SECTION R402
BUILDING THERMAL ENVELOPE

Revise as follows:

R402.1.5 Component performance alternative. Where the proposed total *building thermal envelope* thermal conductance TC_p is less than or equal to the required total *building thermal envelope* thermal conductance TC_r using factors in Table R402.1.2, the *building* shall be considered to be in compliance with Table R402.1.2. The total thermal conductance TC shall be determined in accordance with Equation 4-1. Proposed *U*-factors and slab-on-grade *F*-factors shall be taken from ANSI/ASHRAE/IES Standard 90.1 Appendix A or determined using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include the thermal bridging effects of framing materials. In addition to total thermal conductance TC compliance, the SHGC requirements of Table R402.1.2 and the maximum fenestration *U*-factors of Section R402.6 shall be met.

Equation 4-1

~~$(Up\ A + Fp\ P) \leq (Ur\ A + Fr\ P)$~~

$TC_p \leq TC_r$

where:

$TC_p = U_p\ A + F_p\ P$

$TC_r = U_r\ A + F_r\ P$

$U_p\ A$ = the sum of proposed *U*-factors times the assembly areas in the proposed building.

$F_p\ P$ = the sum of proposed *F*-factors times the slab-on-grade perimeter lengths in the proposed building.
$U_r\ A$ = the sum of *U*-factors in Table R402.1.2 times the same assembly areas as in the proposed building.
$F_r\ P$ = the sum of *F*-factors in Table R402.1.2 times the same slab-on-grade perimeter lengths as in the proposed building.

R402.2.1 Ceilings with attics. Where Section R402.1.3 requires R-49 insulation in the ceiling or attic, installing R-38 over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-49 insulation wherever the full height of uncompressed R-38 insulation extends over the wall top plate at the eaves. Where Section R402.1.3 requires R-60 insulation in the ceiling or attic, installing R-49 over 100 percent of the ceiling or attic area requiring insulation shall satisfy the requirement for R-60 insulation wherever the full height of uncompressed R-49 insulation extends over the wall top plate at the eaves. This reduction shall not apply to the insulation and fenestration criteria in Section R402.1.2 and the Component performance~~Total UA~~ alternative in Section R402.1.5.

R402.2.2 Ceilings without attics. Where Section R402.1.3 requires insulation *R*-values greater than R-30 in the interstitial space above a ceiling and below the structural roof deck, and the design of the roof/ceiling assembly does not allow sufficient space for the required insulation, the minimum required insulation *R*-value for such roof/ceiling assemblies shall be R-30. Insulation shall extend over the top of the wall plate to the outer edge of such plate and shall not be compressed. This reduction of insulation from the requirements of Section R402.1.3 shall be limited to 500 square feet (46 m^2) or 20 percent of the total insulated ceiling area, whichever is less. This reduction shall not apply to the Component performance~~Total UA~~ alternative in Section R402.1.5.

R402.2.5 Access hatches and doors. Access hatches and doors from conditioned to unconditioned spaces such as attics and crawl spaces shall

be insulated to the same *R*-value required by Table R402.1.3 for the wall or ceiling in which they are installed.

Exceptions:

1. Vertical doors providing access from conditioned spaces to unconditioned spaces that comply with the fenestration requirements of Table R402.1.3 based on the applicable climate zone specified in Chapter 3.
2. Horizontal pull-down, stair-type access hatches in ceiling assemblies that provide access from conditioned to unconditioned spaces in Climate Zones 0 through 4 shall not be required to comply with the insulation level of the surrounding surfaces provided the hatch meets all of the following:

   2.1. The average *U*-factor of the hatch shall be less than or equal to U-0.10 or have an average insulation *R*-value of R-10 or greater.

   2.2. Not less than 75 percent of the panel area shall have an insulation *R*-value of R-13 or greater.

   2.3. The net area of the framed opening shall be less than or equal to 13.5 square feet (1.25 m^2).

   2.4. The perimeter of the hatch edge shall be weatherstripped.

Same edit as RED1-214

The reduction shall not apply to the Component performance~~total UA~~ alternative in Section R402.1.5.

Same edit as RED1-220

R402.4.3 Glazed fenestration exemption. Not greater than 15 square feet (1.4 m^2) of glazed fenestration per *dwelling unit* shall be exempt from the *U*-factor and SHGC requirements in Section R402.1.2. This exemption shall not apply to the Component performance~~Total UA~~ alternative in Section R402.1.5.

R402.4.4 Opaque door exemption. One side-hinged opaque door assembly not greater than 24 square feet (2.22 m^2) in area shall be exempt from the *U*-factor requirement in Section R402.1.2. This exemption shall not apply to the Component performance~~Total UA~~ alternative in Section R402.1.5.

Same edit as RED1-221

SECTION R405
SIMULATED BUILDING PERFORMANCE

Revise as follows:

R405.2 Simulated performance compliance. Compliance based on total building performance requires that a *proposed design* meets all of the following:

1. The requirements of the sections indicated within Table R405.2.
2. The proposed total *building thermal envelope* thermal conductance TC ~~UA, which is the sum of the U-factor times assembly area,~~ shall be less than or equal to the *building thermal envelope* thermal conductance TC~~UA~~ using the prescriptive U-factors and F-factors from Table R402.1.2 multiplied by 1.08 in Climate Zones 0, 1, and 2, and 1.15 in Climate Zones 3 through 8 in accordance with Equation 4-2 and R402.1.5. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

   For Climate Zones 0-2: $TC~~UA~~_{\text{Proposed Design}} \le 1.08 \times TC~~UA~~_{\text{Prescriptive reference design}}$ **(Equation 4-2)**

   For Climate Zones 3-8: $TC~~UA~~_{\text{Proposed Design}} \le 1.15 \times TC~~UA~~_{\text{Prescriptive reference design}}$ **(Equation 4-2)**

3. For buildings without a fuel burning appliance for space heating or water heating, the annual energy cost of the proposed design that is less than or equal to 85 percent of the annual energy cost of the *standard reference design*. For buildings with a fuel burning appliance for space heating or water heating, the annual energy cost of the proposed design that is less than or equal to 80 percent of the annual energy cost of the standard reference design. For dwelling units with greater than 5,000 square feet (465 m^2) of living space floor area located above grade plane, the annual energy cost of the proposed design shall be reduced by an additional 5 percent of annual energy cost of the standard reference design. Energy prices shall be taken from a source *approved* by the *code official*, such as the Department of Energy, Energy Information Administration's State Energy Data System Prices and Expenditures reports. Code officials shall be permitted to require time-of-use pricing in energy cost calculations.

   Exceptions:

   1. The energy use based on source energy expressed in Btu or Btu per square foot of *conditioned floor area* shall be permitted to be substituted for the energy cost. The source energy multipliers for all energy sources shall be obtained from ASHRAE Standard 105 (Tables K2, K4, or K8) or from another data source approved by the *code official*.
   2. The energy use based on site energy expressed in Btu or Btu per square foot of conditioned floor area shall be permitted to be substituted for the energy cost for an all-electric building with on-site renewable energy installed.

SECTION R406
ENERGY RATING INDEX COMPLIANCE ALTERNATIVE

Revise as follows:

R406.3 Building thermal envelope. The proposed total *building thermal envelope* thermal conductance TC~~UA, which is sum of *U*-factor times assembly area,~~ shall be less than or equal to the *building thermal envelope* thermal conductance TC ~~UA~~ using the prescriptive *U*-factors and F-factors from Table R402.1.2 multiplied by 1.08 in Climate Zones 0, 1, and 2, and by 1.15 in Climates Zones 3 through 8, in accordance with Equation 4-3 and R402.1.5. The area-weighted maximum fenestration SHGC permitted in Climate Zones 0 through 3 shall be 0.30.

For Climate Zones 0-2: $TC\text{~~}UA\text{~~}_{\text{Proposed design}} \leq 1.08 \times TC\text{~~}UA\text{~~}_{\text{Prescriptive reference design}}$ **(Equation 4-3)**

For Climate Zones 3-8: $TC\text{~~}UA\text{~~}_{\text{Proposed design}} \leq 1.15 \times TC\text{~~}UA\text{~~}_{\text{Prescriptive reference design}}$ **(Equation 4-3)**

SECTION R408
ADDITIONAL EFFICIENCY REQUIREMENTS

R408.2 Additional energy efficiency credit requirements . Two of the additional measures shall be selected from Table R408.2 that meet or exceed a total of ten credits. Five additional credits shall be selected for dwelling units with greater than 5,000 square feet (465 m^2) of living space floor area located above grade plane. Each measure selected shall meet the relevant subsections of Section R408 and receive credit as specified in Table R408.2 for the specific Climate Zone. Interpolation of credits between measures shall not be permitted.

Revise as follows:

TABLE R408.2 CREDITS FOR ADDITIONAL ENERGY EFFICIENCY

Portions of table not shown remain unchanged.

Measure Number	Measure Description	Credit Value								
		Climate Zone 0 & 1	Climate Zone 2	Climate Zone 3	Climate Zone 4	Climate Zone 4C	Climate Zone 5	Climate Zone 6	Climate Zone 7	Climate Zone 8
R408.2.1.1(1)	≥2.5% Reduction in total TC~~UA~~	0	0	0	1	1	1	1	1	1
R408.2.1.1(2)	≥5% reduction in total TC~~UA~~	0	1	1	2	2	3	3	3	3
R408.2.1.1(3)	>7.5% reduction in total TC~~UA~~	0	1	2	2	2	3	3	4	4

R408.2.1.1 Enhanced envelope performance ~~UA~~. The proposed total *building thermal envelope* thermal conductance TC~~UA~~ shall be calculated in accordance with Section R402.1.5 and shall meet one of the following:

1. Not less than 2.5 percent of the total TC~~UA~~ of the *building thermal envelope*.
2. Not less than 5 percent of the total TC~~UA~~ of the *building thermal envelope*.
3. Not less than 7.5 percent of the total TC~~UA~~ of the *building thermal envelope*.

Reason: The Committee approved REPI-26, a DOE proposal, to replace 'total UA' alternative with 'Component performance' alternative but other sections still rely on and reference “UA”. This public comment updates uses of “UA” with “TC” for thermal conductance, the term being used in R402.1.5.
Other solutions to address this problem will likely be submitted and all these public comments should be assigned to an Envelope SC working group to identify the best solution.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
None

Bibliography: None

Workgroup Recommendation

Proposal # 1157

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-220-22 Language change R402.4.3
CDP ID #	1028
Code	IECC RE
Code Section(s)	R402.4.3
Location	base
Proponent	Michele DeFrance mdefrance@portlandmaine.gov
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Disapprove based on action on 186
Vote	14-0-0
Recommendation Date	3/22/23
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 #	RED1-221-22 Language change R402.4.4
CDP ID #	1029
Code	IECC RE
Code Section(s)	R402.4.4
Location	base
Proponent	Michele DeFrance mdefrance@portlandmaine.gov
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Disapprove based on action on 186
Vote	14-0-0
Recommendation Date	3/22/23
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 #	RED1-214-22 Language change R402.2.5
CDP ID #	1030
Code	IECC RE
Code Section(s)	R402.2.5
Location	base
Proponent	Michele DeFrance mdefrance@portlandmaine.gov
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Table to be heard/discussed with similar proposals in workgroup making for a cleaner process and less work for ICC.
Recommendation	based on action on 186
Vote	14-0-0
Recommendation Date	3/22/23
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 #	RED1-208-22 Envelop Req for simulated bldg perf
CDP ID #	1307
Code	IECC RE
Code Section(s)	R402.1.5
Location	base
Proponent	Maston Stafford maston.stafford@texenergy.org
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	
Recommendation	Clarifies R405 to be consistent with edits to R402.1.5 that were approved in the last round of comments.
Vote	9-4-1 approve as modified
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X186 _____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	

RED1-208-22 (MODIFICATION)

IECC: R405.4.2, TABLE R405.4.2(1)

Proponents: Maston Stafford, representing US-EcoLogic, Inc. (maston.stafford@texenergy.org); Aaron Gary, representing Tempo, Inc.

(aaron.gary@texenergy.org); Gayathri Vijayakumar, representing Steven Winter Associates, Inc. (gvijayakumar@swinter.com)

2024 International Energy Conservation Code [RE Project]

This modification removes edits shown in the monograph to R402.1.5, R405.2 and R406.3, based on overlap with RED1-186.

Other edits to the monograph are shown below in red and/or explained in the comments.

Revise as follows:

R402.2.10 Slab-on-grade floors. Slab-on-grade floors, in contact with the ground, with a floor surface within 24 inches (600 mm) above or below grade shall be insulated in accordance with Table R402.1.3.

> **Exception:** Slab-edge insulation is not required in jurisdictions designated by the code official as having a very heavy termite infestation probability.

R405.4.2 Residence specifications. The *standard reference design* and *proposed design* shall be configured and analyzed as specified by Table R405.4.2(1). Table R405.4.2(1) shall include, by reference, all notes contained in Table R402.1.~~3~~2. Proposed *U*-factors and slab-on-grade *F*-factors shall be taken from ANSI/ASHRAE/IES Standard 90.1 Appendix A or determined using a method consistent with the ASHRAE *Handbook of Fundamentals* and shall include the thermal bridging effects of framing materials.

TABLE R405.4.2(1) SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

Portions of table not shown remain unchanged.

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Foundations	Type: same as proposed.	As proposed
	Foundation wall or slab extension above grade: 1 foot (30cm) Foundation wall or slab extension below grade: same as proposed Foundation wall or slab perimeter length: same as proposed Soil characteristics: same as proposed.	As proposed
	Foundation wall *U*-factor and slab-on-grade *F*-factor: as specified in Table R402.1.2.[!]	As proposed

For SI: 1 square foot = 0.93 m^2, 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m^2, 1 gallon (US) = 3.785 L, °C = (°F-32)/1.8, 1 degree = 0.79 rad.

l. In accordance with Section R402.2.10, an ~~A maximum~~ *F*-factor of 0.73 shall be assumed ~~apply~~ for the *standard reference design* in jurisdictions designated by the *code official* as having a very heavy termite infestation probability.

Reason: First, a modification to Section R405.4.2 stating that Table R405.4.2(1) shall include all notes contained in Table R402.1.2. Table R405.4.2(1) makes many references to the U-factors and now F-factors in Table R402.1.2 which would justify including all the footnotes from that table as opposed to the notes in Table R402.1.3.
Second, the next modification to section R405.4.2 brings language directly from Section R402.1.5 adding guidance on determining U-factors and F-factors when using R405 Simulated Building Performance.
Third, the footnote (lowercase L) to Table R405.4.2(1) is intended to coordinate with existing Section R402.2.10 addressing slab-edge insulation exception in areas with very heavy termite infestation probability. The exception states “Slab-edge insulation is not required” and this footnote then applies the proper F-factor for a slab-on-grade without edge insulation for the standard reference design. Adding this footnote provides clarity in the Standard Reference Design.
One errata modification in Table R405.4.2(1) standard reference design of Foundations that should read slab-on-grade as opposed to only slab as published in the December 26, 2022 IECC Residential Public Comment Draft #1.

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction. There is no cost impact.

International Energy Conservation Code
Code Change Proposal Tracking Sheet

Proposal #	RED1-253-22 Tropical climate region IECC-C reference
CDP ID #	1100
Code	IECC RE
Code Section(s)	R407.2
Location	base
Proponent	Greg Johnson gjohnsonconsulting@gmail.com
Proposal Status	SC rev
Subcommittee	RE Envelope
Subcommittee Notes	Motion to approve failed
Recommendation	Removing the reference to the table without substitution creates confusion.
Vote	7-6-0 disapprove
Recommendation Date	3/22/23
Next Step	To Subcommittee To Advisory Group_____ To Consensus Committee_X_____
Consensus Committee	
Committee Response	
Vote	Affirmative_____ Negative_____ Table_____ To Subcommittee_____
Date	