Air Leakage Restructuring Consensus Proposal (594)

IECC®: C402.5.5, C402.5, C402.5.1, C402.5.1.1 (New), C402.5.1.1, C402.5.10, C402.5.1.2.2 (New), C402.5.1.2.2.1 (New), C402.5.1.2, C402.5.3, C402.5.2, C402.5.1.5, C402.5.1.3, C402.5.1.4, C402.5.4, TABLE C402.5.4, C402.5.6, C402.5.7, C402.5.9, C402.5.8, C402.5.11, C402.5.11.1, C406.9

Proponents:

2021 International Energy Conservation Code

Revise as follows:

~~**C402.5.5**~~ **C402.1.3 Rooms containing fuel-burning appliances.** In *Climate Zones* 3 through 8, where combustion air is supplied through openings in an exterior wall to a room or space containing a space-conditioning fuel-burning appliance, one of the following shall apply:

1. The room or space containing the appliance shall be located outside of the *building thermal envelope*.
2. The room or space containing the appliance shall be enclosed and isolated from conditioned spaces inside the *building thermal envelope*. Such rooms shall comply with all of the following:

   2.1. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be insulated to be not less than equivalent to the insulation requirement of below-grade walls as specified in Table C402.1.3 or Table C402.1.4.

   2.2. The walls, floors and ceilings that separate the enclosed room or space from conditioned spaces shall be sealed in accordance with Section ~~C402.5.1.1~~ C402.5.1.2.

   2.3. The doors into the enclosed room or space shall be shall be fully gasketed.

   2.4. ~~Water lines and~~ Piping serving as part of a heating or cooling system and ducts in the enclosed room or space shall be insulated in accordance with Section C403. Service water piping shall be insulated in accordance with Section C404.

   2.5. Where an air duct supplying combustion air to the enclosed room or space passes through *conditioned space*, the duct shall be insulated to an *R*-value of not less than R-8.

Exception: Fireplaces and stoves complying with Sections 901 through 905 of the International Mechanical Code, and Section 2111.14 of the International Building Code.

C402.5 Air leakage—thermal envelope. The *building thermal envelope* shall comply with Sections C402.5.1 through Section C402.5.8.1 ~~C402.5.11.1, or the building *thermal envelope* shall be tested in accordance with Section C402.5.2 or C402.5.3. Where compliance is based on such testing, the building shall also comply with Sections C402.5.7, C402.5.8 and C402.5.9.~~

C402.5.1 Air barriers. A continuous air barrier shall be provided throughout the *building thermal envelope*. The ~~continuous air barriers shall be located on the inside or outside of the building thermal envelope, located within the assemblies composing the building thermal envelope, or any combination thereof. The air barrier shall comply with Sections C402.5.1.1, and C402.5.1.2.~~ *air barrier* is permitted to be any combination of inside, outside, or within the building thermal envelope. The *air barrier* shall comply with Sections C402.5.1.1, and C402.5.1.2. The *air leakage* performance of the *air barrier* shall be verified in accordance with Section C402.5.2.

Exception: *Air barriers* are not required in buildings located in *Climate Zone* 2B.

Add new text as follows:

C402.5.1.1 Air barrier design and documentation requirements. Design of the continuous *air barrier* shall be documented in the following manner:

1. Components comprising the continuous *air barrier* and their position within each *building thermal envelope* assembly shall be identified.
2. Joints, interconnections, and penetrations of the continuous *air barrier* components shall be detailed.
3. The continuity of the *air barrier* building element assemblies that enclose conditioned space or provide a boundary between conditioned space and unconditioned space shall be identified.

4. Documentation of the continuous air barrier shall detail methods of sealing the air barrier such as wrapping, caulking, gasketing, taping or other *approved* methods at the following locations:
   4.1 Joints around fenestration and door frames.
   4.2 Joints between walls and floors, between walls at building corners, between walls and roofs including parapets and copings, where above-grade walls meet foundations, and similar intersections.
   4.3 Penetrations or attachments through the continuous *air barrier* in building envelope roofs, walls, and floors.
   4.4 Building assemblies used as ducts or plenums.
   4.5 Changes in continuous *air barrier* materials and assemblies.
5. Identify where testing will or will not be performed in accordance with Section C402.5.2 Where testing will not be performed, a plan for field inspections required by C402.5.2.3 shall be provided that includes the following:
   5.1 Schedule for periodic inspection,
   5.2 Continuous air barrier scope of work,
   5.3 List of critical inspection items,
   5.4 Inspection documentation requirements, and
   5.5 Provisions for corrective actions where needed.

Revise as follows:

C402.5.1.~~1~~ 2 Air barrier construction. The *continuous air barrier* shall be constructed to comply with the following:

1. The *air barrier* shall be continuous for all assemblies that ~~are~~ compromise the *building thermal envelope* ~~of the building~~ and across the joints and assemblies.
2. Air barrier joints and seams shall be sealed, including sealing transitions in places and changes in materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure differentials such as those from design wind loads, stack effect and mechanical ventilation.
3. Penetrations of the *air barrier* shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Sealing shall allow for expansion, contraction and mechanical vibration. Sealing materials shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure.~~Joints and seams associated with penetrations shall be sealed in the same manner or taped. Sealing materials shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.~~ Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the fire sprinkler manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.
4. Recessed lighting fixtures shall comply with Section ~~C402.5.10~~ C402.5.1.2.1. Where similar objects are installed that penetrate the *air barrier*, provisions shall be made to maintain the integrity of the *air barrier*.
5. Electrical and communication boxes shall comply with C402.5.1.2.2.

C402.5.~~10~~ 1.2.1 Recessed lighting. Recessed luminaires installed in the *building thermal envelope* shall be all of the following:

1. IC-rated.
2. Labeled as having an air leakage rate of not ~~more~~ greater than 2.0 cfm (0.944 L/s) ~~when~~ where tested in accordance with ASTM E283 at a 1.57 psf (75 Pa) pressure differential.
3. Sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

Add new text as follows:

C402.5.1.2.2 Electrical and communication boxes. Electrical and communication boxes that penetrate the air barrier of the *building thermal envelope*, and that do not comply with C402.5.1.2.2.1, shall be caulked, taped, gasketed, or otherwise sealed to the air barrier element being penetrated. All openings on the concealed portion of the box shall be sealed. Where present, insulation shall rest against all concealed portions of the box.

C402.5.1.2.2.1 Air-sealed boxes. Where air-sealed boxes are installed, they shall be marked in accordance with NEMA OS 4. Air-sealed boxes shall be installed in accordance with the manufacturer's instructions.

Revise as follows:

C402.5.1.2 Air leakage compliance. ~~A continuous air barrier for the opaque building envelope shall comply with the following:~~ Air leakage of the

building thermal envelope shall be tested by an *approved* third party in accordance with C402.5.2.1. The measured air leakage shall not be greater than 0.35 cfm/ft^2 (1.8 L/s x m^2) of the *building thermal envelope* area at a pressure differential of 0.3 inch water gauge (75 Pa) with the calculated *building thermal envelope* surface area being the sum of the above- and below-grade *building thermal envelope*.

Exceptions:

1. Where the measured *air leakage* rate is greater than 0.35 cfm/ft^2 (1.8 L/s x m^2) but is not greater than 0.45 cfm/ft2 (2.3 L/s x m^2), the *approved* third party shall perform a diagnostic evaluation using smoke tracer or infrared imaging. The evaluation shall be condued while the building is pressurized along with a visual inspection of the *air barrier* in accordance with ASTM E1186. All identified leaks shall be sealed where such sealing can be made without damaging existing building components. A report specifying the corrective actions taken to seal leaks shall be deemed to establish compliance with the requirements of this section where submitted to the code official and the building owner. Where the measured *air leakage* rate is greater than 0.45 cfm/ft^2 (2.3 L/s x m^2), corrective actions must be made to the building and an additional test completed for which the results are 0.45 cfm/ft2 (2.3 L/s x m^2), or less.
2. Buildings in Climate Zones 2B.
3. Buildings larger than 25,000 square feet (2300 m2) floor area in Climate Zones 0 through 4, other than Group R and I occupancies, that comply with C402.5.2.3
4. As an alternative, buildings or portions of building, containing Group R and I occupancies, shall be permitted to be tested by an *approved* third party in accordance with C402.5.2.2. The reported *air leakage* of the *building thermal envelope* shall not be greater than 0.27 cfm/ft2 (1.4 L/s x m2) of the *testing unit enclosure* area at a pressure differential of 0.2 inch water gauge (50 Pa).

~~1. Buildings or portions of buildings, including Group R and I occupancies, shall meet the provisions of Section C402.5.2.~~

~~**Exception:** Buildings in Climate Zones 2B, 3C and 5C.~~

~~2. Buildings or portions of buildings other than Group R and I occupancies shall meet the provisions of Section C402.5.3.~~

~~**Exceptions:**~~

~~1. Buildings in Climate Zones 2B, 3B, 3C and 5C.~~
~~2. Buildings larger than 5,000 square feet (464.5 m^2) floor area in Climate Zones 0B, 1, 2A, 4B and 4C.~~
~~3. Buildings between 5,000 square feet (464.5 m^2) and 50,000 square feet (4645 m^2) floor area in Climate Zones 0A, 3A and 5B.~~

~~3. Buildings or portions of buildings that do not complete air barrier testing shall meet the provisions of Section C402.5.1.3 or C402.5.1.4 in addition to Section C402.5.1.5.~~

C402.5.~~3~~ 2.1 ~~Building thermal envelope testing~~ Whole building test method and reporting. The *building thermal envelope* shall be tested for *air leakage* in accordance with ~~ASTM E779, ANSI/RESNET/ICC 380,~~ ASTM E3158 ~~or ASTM E1827~~ or an equivalent *approved* method ~~approved by the code official. The measured air leakage shall not exceed 0.40 cfm/ft^2 (2.0 L/s × m^2) of the *building thermal envelope* area at a pressure differential of 0.3 inch water gauge (75 Pa). Alternatively, portions of the building shall be tested and the measured air leakages shall be area weighted by the surface areas of the building envelope in each portion. The weighted average test results shall not exceed the whole building leakage limit. In the alternative approach, the following portions of the building shall be tested:~~ A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the code official and the building owner.

~~1. The entire envelope area of all stories that have any spaces directly under a roof.~~
~~2. The entire envelope area of all stories that have a building entrance, exposed floor, or loading dock, or are below grade.~~
~~3. Representative above-grade sections of the building totaling at least 25 percent of the wall area enclosing the remaining conditioned space.~~

Exception~~s~~: ~~Where the measured air leakage rate exceeds 0.40 cfm/ft^2 (2.0 L/s × m^2) but does not exceed 0.60 cfm/ft^2 (3.0 L/s × m^2), a diagnostic evaluation using smoke tracer or infrared imaging shall be conducted while the building is pressurized along with a visual inspection of the air barrier. Any leaks noted shall be sealed where such sealing can be made without destruction of existing building components. An additional report identifying the corrective actions taken to seal leaks shall be submitted to the code official and the building owner, and shall be deemed to comply with the requirements of this section.~~

1. For buildings less than 10,000 ft^2 (1000 m^2) the entire *building thermal envelope* shall be permitted to be tested in accordance with ASTM E779, ASTM E3158, or ASTM E1827 or an equivalent *approved* method.

2. For buildings greater than 50,000 ft^2 (4645 m^2), portions of the building shall be permitted to be tested and the measured *air leakage* shall be area-weighted by the surface areas of the *building thermal envelope* in each portion. The weighted average tested *air leakage* shall not be greater than the whole building leakage limit. The following portions of the building shall be tested:

   2.1. The entire *building thermal envelope* area of stories that have any conditioned spaces directly under a roof.

   2.2 The entire *building thermal envelope* area of stories that have a building entrance, a floor over unconditioned space, a loading dock, or that are below grade.

   2.3 Representative above-grade portions of the building totaling not less than 25 percent of the wall area enclosing the remaining conditioned space.

C402.5.2.2 Dwelling and sleeping unit enclosure test~~ing~~ method and reporting. The *building thermal envelope* shall be tested for *air leakage* in accordance with ASTM E779, ANSI/RESNET/ICC 380, ASTM E1827 or an equivalent *approved* method ~~approved by the *code official*. The measured air leakage shall not exceed 0.30 cfm/ft^2 (1.5 L/s m^2) of the testing unit enclosure area at a pressure differential of 0.2 inch water gauge (50 Pa).~~ Where multiple dwelling units or sleeping units or other occupiable conditioned spaces are contained within one *building thermal envelope*, each unit shall be considered an individual testing unit, and the building air leakage shall be the weighted average of all testing unit results, weighted by each *testing unit~~'s~~ enclosure area*. Units shall be tested ~~separately with an unguarded blower door test as follows:~~ without simultaneously pressuring adjacent units and shall be separately tested as follows:

1. Where buildings have ~~fewer~~ less than eight testing units, each testing unit shall be tested.
2. ~~For~~ Where buildings ~~with~~ have eight or more testing units, the greater of seven units or 20 percent of the testing units in the building shall be tested, including a top floor unit, a middle floor unit, a ground floor unit and a unit with the largest testing *unit enclosure area*. For each tested unit that exceeds the maximum *air leakage* rate, an additional ~~two~~ three units shall be tested, including a mixture of testing unit types and locations.

C402.5.~~1.5~~ 2.3 Building envelope design and construction ~~performance~~ verification criteria. Where Sections C402.5.2.1 and C402.5.2.2 are not applicable, ~~T~~ the installation of the continuous *air barrier* shall be verified by the *code official*, a *registered design professional* or *approved* agency in accordance with the following:

1. A review of the construction documents and other supporting data shall be conducted to assess compliance with the requirements in Section C402.5.1.
2. Inspection of continuous air barrier components and assemblies shall be conducted during construction ~~while the air barrier is still accessible for inspection and repair~~ to verify compliance with the requirements of Sections C402.5.~~1.3~~ 2.3.1 ~~and~~ or C402.5.~~1.4.~~ 2.3.2. The *air barrier* shall remain accessible for inspection and repair.
3. A final ~~commissioning~~ inspection report shall be provided for inspections completed by the *registered design professional* or *approved* agency. The ~~commissioning~~ inspection report shall be provided to the building owner or owner's authorized agent and the *code official*. The report shall identify deficiencies found during inspection ~~the review of the construction documents and inspection~~ and details of corrective measures taken.

C402.5.~~1.3~~ 2.3.1 Materials. Materials with an air permeability not greater than 0.004 cfm/ft^2 (0.02 L/s × m^2) under a pressure differential of 0.3 inch water gauge (75 Pa) when tested in accordance with ASTM E2178 shall comply with this section. Materials in Items 1 through 16 below shall be deemed to comply with this section, provided that joints are sealed and materials are installed as air barriers in accordance with the manufacturer's instructions.

1. Plywood with a thickness of not less than $^3/_8$ inch (10 mm).
2. Oriented strand board having a thickness of not less than $^3/_8$ inch (10 mm).
3. Extruded polystyrene insulation board having a thickness of not less than $^1/_2$ inch (12.7 mm).
4. Foil-back polyisocyanurate insulation board having a thickness of not less than $^1/_2$ inch (12.7 mm).
5. Closed-cell spray foam having a minimum density of 1.5 pcf (2.4 kg/m^3) and having a thickness of not less than $1^1/_2$ inches (38 mm).
6. Open-cell spray foam with a density between 0.4 and 1.5 pcf (0.6 and 2.4 kg/m^3) and having a thickness of not less than 4.5 inches (113 mm).
7. Exterior or interior gypsum board having a thickness of not less than $^1/_2$ inch (12.7 mm).
8. Cement board having a thickness of not less than $^1/_2$ inch (12.7 mm).
9. Built-up roofing membrane.
10. Modified bituminous roof membrane.
11. Single-ply roof membrane.
12. A Portland cement/sand parge, or gypsum plaster having a thickness of not less than $^5/_8$ inch (15.9 mm).

13. Cast-in-place and precast concrete.
14. Fully grouted concrete block masonry.
15. Sheet steel or aluminum.
16. Solid or hollow masonry constructed of clay or shale masonry units.

C402.5.~~1.4~~ 2.3.2 Assemblies. Assemblies of materials and components with an average *air leakage* not greater than 0.04 cfm/ft^2 (0.2 L/s × m^2) under a pressure differential of 0.3 inch of water gauge ~~(w.g.)~~(75 Pa) ~~when~~ where tested in accordance with ASTM E2357, ASTM E1677 , ASTM D8052 or ASTM E283 shall comply with this section. Assemblies listed in Items 1 through 3 below shall be deemed to comply, provided that joints are sealed and the requirements of Section C402.5.1.1 are met.

1. Concrete masonry walls coated with either one application of block filler or two applications of a paint or sealer coating.
2. Masonry walls constructed of clay or shale masonry units with a nominal width ~~of~~ greater than or equal to 4 inches (102 mm) ~~or more~~.
3. A Portland cement/sand parge, stucco or plaster not less than $^1/_2$ inch (12.7 mm) in thickness.

C402.5.~~4~~ 3 Air leakage of fenestration. The *air leakage* of fenestration assemblies shall ~~meet~~ comply with ~~the provisions of~~ Table C402.5.~~4~~ 3. Testing shall be conducted ~~in accordance with the applicable reference test standard in Table C402.5.4~~ by an accredited, independent testing laboratory in accordance with applicable reference test standad in Table C402.5.3 and *labeled* by the manufacturer.

Exceptions:

1. Field-fabricated fenestration assemblies that are sealed in accordance with Section C402.5.1.2.
2. Fenestration in buildings that ~~comply with the testing alternative of~~ are tested for air leakage in accordance with Section C402.5 .2 are not required to meet the air leakage requirements in Table C402.5.~~4~~ 3.

TABLE C402.5.~~4~~ 3 MAXIMUM AIR LEAKAGE RATE FOR FENESTRATION ASSEMBLIES

FENESTRATION ASSEMBLY	MAXIMUM RATE (CFM/FT^2)	TEST PROCEDURE
Windows	0.20[a]	AAMA/WDMA/CSA101/I.S.2/A440 or NFRC 400
Sliding doors	0.20[a]	
Swinging doors	0.20[a]	
Skylights—with condensation weepage openings	0.30	
Skylights—all other	0.20[a]	
Curtain walls	0.06	NFRC 400 or ASTM E283 at 1.57 psf (75 Pa)
Storefront glazing	0.06	
Commercial glazed swinging entrance doors	1.00	
Power-operated sliding doors and power operated folding doors	1.00	
Revolving doors	1.00	
Garage doors	0.40	ANSI/DASMA 105, NFRC 400, or ASTM E283 at 1.57 psf (75 Pa)
Rolling doors	1.00	
High-speed doors	1.30	

For SI: 1 cubic foot per minute = 0.47 L/s, 1 square foot = 0.093 m^2.

a. The maximum rate for windows, sliding and swinging doors, and skylights is permitted to be 0.3 cfm per square foot of fenestration or door area when tested in accordance with AAMA/WDMA/CSA101/I.S.2/A440 at 6.24 psf (300 Pa).

C402.5.~~6~~ 4 Doors and access openings to shafts, chutes, stairways and elevator lobbies. Doors and *access* openings from conditioned space to shafts, chutes stairways and elevator lobbies not within the scope of the fenestration assemblies covered by Section C402.5.~~4~~ 3 shall be gasketed, weather-stripped or sealed.

Exceptions:

1. Door openings required to comply with Section 716 of the *International Building Code*.
2. Doors and door openings required ~~to comply with UL 1784~~ by the *International Building Code* to comply with UL 1784.

C402.5.~~7~~ 5 Air intakes, exhaust openings, stairways and shafts. Stairway enclosures, elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be provided with dampers in accordance with Section C403.7.7.

C402.5.~~9~~ 6 Vestibules. Building entrances shall be protected with an enclosed vestibule~~;~~ . ~~with all d~~ Doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. The installation of one or more revolving doors in the *building entrance* shall not eliminate the requirement that a vestibule be provided on any doors adjacent to revolving doors.

Exceptions: Vestibules are not required for the following:

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

C402.5.~~8~~ 7 Loading dock weather seals. Cargo door openings and loading door openings shall be equipped with weather seals that restrict ~~infiltration~~ air leakage and provide direct contact along the top and sides of vehicles that are parked in the doorway.

C402.5.~~11~~ 8 Operable openings interlocking. Where occupancies utilize operable openings to the outdoors that are larger than 40 square feet (3.7 m^2) in area, such openings shall be interlocked with the heating and cooling system ~~so as~~ to raise the cooling setpoint to 90°F (32°C) and lower the heating setpoint to 55°F (13°C) whenever the operable opening is open. The change in heating and cooling setpoints shall occur ~~within 10 minutes of opening the operable opening.~~when the operable opening has been open for a period not to exceed 10 minutes.

Exceptions:

1. Operable openings into s~~S~~eparately zoned areas associated with the preparation of food that contain appliances that contribute to the HVAC loads of a restaurant or similar type of occupancy.
2. Storage occupancies ~~Warehouses~~ that utilize overhead doors for the function of the occupancy, where *approved* ~~by the code official~~.
3. ~~The first entrance d~~ Doors ~~where~~ located in the exterior wall ~~and~~ that are part of a vestibule system.

C402.5.~~11.1~~ 8.1 Operable controls. Controls shall comply with Section C403.1~~4~~ 3.

C406.9 Reduced air ~~infiltration~~ leakage. *Air* ~~infiltration~~*leakage of the building thermal envelope* shall be ~~verified~~ tested by an *approved* third party ~~whole-building pressurization testing conducted~~ in accordance with ~~ASTM E779 or ASTM E1827 by an independent third party~~ Section C402.5.2.1. The measured *air~~-~~leakage* ~~rate of the building envelope~~ shall not exceed 0.2~~5~~ 2 cfm/ft^2 (~~2.0~~ 1.1 L/s × m^2) of the *building thermal envelope* ~~under~~ at a pressure differential of 0.3 inches water column (75 Pa), with the calculated surface area being the sum of the above- and below-grade *building thermal envelope.* ~~A report that includes the tested surface area, floor area, air by volume, stories above grade, and leakage rates shall be submitted to the code official and the building owner.~~

~~**Exception:** For buildings having over 250,000 square feet (25 000 m^2) of *conditioned floor area*, air leakage testing need not be conducted on the whole building where testing is conducted on representative above-grade sections of the building. Tested areas shall total not less than 25 percent of the conditioned floor area and shall be tested in accordance with this section.~~

Reason: Reason: This proposal is a merged proposal based on parts or all of proposals CEPI-55, CEPI-56, CEPI-57, CEPI-58, CEPI-63 Pt1, and CEPI-70 aimed primarily at reorganizing the structure of Section C402.5 to reduce redundancy and improve the clarity of the section. Section C402.5 is currently one of the most intricate and potentially confusing sections of the code, and this proposal seeks to simplify it by improving the flow of the text. Reorganization focused on the re-structure of the existing testing requirements to have clear performance requirements, testing criteria requirements and whole building testing exceptions. Specifically:

· The restructuring separates sections specifying the air leakage maximum values from sections specifying the methods by which these values are tested and verified. This allows for the enhanced air leakage option in Section C406 to be tested by the same by the same test method as the basic requirements in Section C402.5. This will enable consistency between the two sections and reduce divergence as the code is developed in future code cycles. Furthermore, this section separation will allow an easier revision of the code as new technology are deployed in the industry.

· Adding a clarification that the Group R & I sleeping and dwelling unit testing is optional. Group R & I buildings are permitted to use whole building testing.

· Removes overlapping exceptions, and repeated testing references.

Some additional requirements contained in CEPI-57 and CEPI-58 are included.

Summary of changes in merged, re-structure proposal:

The restructure is shown in the table below.

· Referenced Section and Table numbers is shown in the proposal text in green to aid in review.

· Clauses/requirements/exceptions dealing with the performance level stringency and climate zone and building size test exceptions that were recommended by the SC action on overlay proposals (CEPI-71, CEPI-61 & CEPI-62) are highlighted in red. Changes in stringency from CEPI-71 are shown below.

IECC-2021

Based on CEPI-71

Whole Building leakage limit

0.40 cfm/ft^2 (2.0 L/s × m^2) @0.3 inch water gauge (75 Pa)

0.35 cfm/ft^2 (1.8 L/s × m2) @ 0.3 inch water gauge (75 Pa)

Oops clause upper limit

0.60 cfm/ft^2 (2.3 L/s × m^2) @0.3 inch water gauge (75 Pa)

0.45 cfm/ft^2 (2.3 L/s × m^2) @0.3 inch water gauge (75 Pa)

Dwelling unit leakage limit

0.30 cfm/ft^2 (1.5 L/s x m^2) @ 0.2 inch water gauge (50 Pa).

0.27 cfm/ft^2 (1.4 L/s x m^2) @ 0.2 inch water gauge (50 Pa).

C406.9 Energy credit (whole building)

0.25 cfm/ft^2 (2.0 L/s × m^2) @ 0.3 inches water column (75 Pa)

0.22 cfm/ft^2 (1.1 L/s × m^2) @ 0.3 inches water column (75 Pa)

Cost Impact: The code change proposal will neither increase nor decrease the cost of construction.
The restructuring aspect of this code change proposal will neither increase nor decrease the cost of construction as written, because it is just rearranging the current requirements for better clarity and usability. This reorganization also includes changes from other approved proposals (CEPI-32, CEPI-60, CEPI-68 and CEPI-69), whose cost impact statements also indicate that they will neither increase nor decrease the cost of construction.

As part of the restructuring and cleanup, this code proposal does include the results of other air leakage proposals previously approved by the envelope subcommittee that do increase the cost of construction. Please see the associated cost statements for CEPI-61 and CEPI-71, both as modified.