National Association of Home Builders

2012

International Codes Suggested Amendments

National Association of Home Builders

6/20//2015

State and local HBAs should consider these amendments to maintain cost-effective and affordable code provisions when discussing the adoption of the 2012 International Codes. NAHB developed these amendments based on the outcome of the 2010-2011 ICC Code Development Cycles.

Each amendment is shown in *legislative text* (underline and ~~strikethrough~~) and includes a supporting reason statement explaining why the jurisdiction should consider them. Some of the suggested amendments, such as those for energy code provisions and the residential sprinklers, have additional supporting documents and information on the NAHB website and are so indicated.

We include a brief introduction on each suggested amendment. Choose the code change you are interested in proposing to your local jurisdiction. The underlined portion is a link to the proposed change. You can copy and or change any portion of the Word document to fit your precise needs.

If you have questions or would like additional information, please contact NAHB Staff:

Gary Ehrlich, PE
Senior Program Manager
202-266-8545
gehrlich@nahb.org

Don Surrena, CBO
Program Manager, Energy Efficiency
202-266-8574
dsurrena@nahb.org

Dan Buuck, CBO
Program Manager,
202-266-8366
dbuuck@nahb.org

Table of Contents

2012 International Mechanical Code

2012 International Plumbing Code

2012 International Existing Building Code

2012 International Residential Code

1. Fire Separation Distance

This amendment would return the fire separation distances between structures to those that were required prior to residential sprinklers becoming part of the IRC.

2. Self-Closing Devices

This amendment removes the mandatory requirements that all doors separating the garage from the interior dwelling be equipped with a self-closing and latching device.

3. Stair Geometry (8-¼ Inch Riser)

This amendment returns the IRC to the 8 ¼ inch riser by 9 inch tread depth used in the 2006 IRC.

4. Stair Geometry (8-Inch Riser)

This amendment revises the IRC to match the 8-inch riser by 9-inch tread depth as found in the UBC.

5. Guard Requirement

This amendment reinstates this requirement only for those areas where the elevation difference from the edge of the walking surface to the ground directly below is more than 30 inches

6. Window Fall Protection Devices

This amendment deletes the language that requires installation of window fall protection devices and replaces it with language that governs how they must be installed when provided.

7. Residential Fire Sprinklers

This amendment deletes the mandatory requirement for residential sprinklers from the IRC.

8. Protection of Building Envelope

This amendment eliminates the requirement to provide an exterior-rated door at the top of a stairway that is enclosed by breakaway walls and provides access to a dwelling elevated on piers or piles in a coastal flood zone.

9. Solar Photovoltaic Roof Systems

This amendment corrects language copied from the International Fire Code to address solar photovoltaic panels installed on the roof of one- and two-family dwellings.

10. Mezzanines

This amendment removes IBC language that does not apply to mezzanines within one- and two-family dwellings.

. **11. Foundation Anchorage**

This amendment provides an exception to the requirement for attaching bottom plates of braced wall panels on the interior of a dwelling to foundations with anchor bolts. The exception applies in low-wind, low-seismic areas where gypsum board is used as the bracing method for the interior wall in question.

12. Comprehensive Energy Amendment

This is a comprehensive amendment, providing flexibility for meeting energy code requirements while maintaining energy performance. It provides a “true” unrestricted performance path that allows for cost-optimized construction of an energy-equivalent house utilizing energy neutral options. Incorporating; building tightness tradeoff, equipment efficiency tradeoff and window area tradeoff. ***(Includes Amendments 17, 25, 26)***

13. Remove "Mandatory" Requirements for Above-Code Programs

This amendment eliminates the need to meet all "mandatory" requirements identified by the IRC Chapter 11 as long as the program exceeds the energy-efficiency levels required.

14. Overhang Credit for SHGC (climate zones 1-4)

This amendment allows the use of overhangs to meet the solar heat gain coefficient requirements in the IECC.

15. Multifamily Air Leakage Testing

This amendment adds an exception to allow compliance to the air barrier requirements and allow builders to test the entire building as a whole, as permitted for commercial buildings.

16. Air Leakage Rate Correction (climate zones 1-8)

This amendment modifies the requirement from 3 air changes per hour (ACH) to 5 ACH in Climate Zones 1-8**.**

17. Air Leakage Trade-Off

This amendment allows builders to trade improvements in other building energy components for less stringent building envelope pressure test results, provides flexibility in meeting the air-tightness requirements and provides options for recovering from an unexpected air-tightness test failure. ***(Part of Amendment # 12)***

18. Prescriptive Table Requirements

This amendment replaces 2012 IRC Chapter 11 Tables N1102.1.2 and N1102.1.4 with tables from the 2009 IRC Chapter 11.

19. Basement Wall R-Value/U-Factors Reduction (Climate Zone 5)

This amendment reduces the basement wall R-value requirement in Climate Zone 5 to a more reasonable R-value based those acceptable to both NAHB and DOE in the 2009 IRC.

20. Ceiling R-Value/U-Factors Reduction (climate zones 2-5)

This amendment reinstates the appropriate minimum ceiling R-values in climate zones 2, 3, 4 and 5, those published in the 2009 IRC, Chapter 11.

21. Correct SHGC for Climate Zone 4

This amendment changes the Climate Zone 4 SHGC back to N/R, because a prescriptive restriction for the SHGC of 0.40 in Climate Zone 4 does not save energy.

22. Wall R-Value/U-Factors Corrections (Climate Zone 3)

This amendment reinstates the appropriate minimum wall assembly R-values/U-factors in Climate Zone 3 published in the 2009 IECC.

23. Wall R-Value/U-Factors Corrections (Climate Zones 6-8)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zones 6, 7 & 8 published in the 2009 IRC Chapter 1.

24 .Trade-Off for 2X6 Wall

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies, which have reduced framing factors and R-18 insulation.

25. Mechanical Equipment Trade-Off

This amendment reinstates the performance option in the IRC Chapter 11 to reduce prescriptive requirements by installing HVAC equipment with higher energy-efficiency performance ratings than required by code. ***(Part of Amendment # 12)***

26. Window Area Trade-Off

This amendment provides the building designer the ability to reduce window area and get credit for the energy saved. ***(Part of Amendment # 12)***

27. Exhaust Hood Makeup Air This amendment reduces the amount of makeup air required for kitchen draft hoods in excess of 400 cfm and includes an exception which increases the threshold for requiring makeup air to draft hoods larger than 600 cfm
28. Joints, Seams, and Connections This amendment eliminates the need to seal longitudinal seams in residential ductwork that operate at pressures below a 2 inch water column.
Back to Table of Contents

Return to Residential

1. Fire Separation Distance

This amendment would return the fire separation distances between structures to those required before residential sprinklers became part of the International Residential Code.

Revise as follows:

Delete Tables R302.1(1) and R302.1(2) and replace with new table.

TABLE R302.1 EXTERIOR WALLS

EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour—tested in accordance with ASTM E 119 or UL 263 with exposure from the outside	0 feet
	Not fire-resistance rated	0 hours	3 feet[a]
Projections	Not allowed	N/A	< 2 feet
	Fire-resistance rated	1 hour on the underside[b, c]	2 feet[a]
	Not fire-resistance rated	0 hours	3 feet
Openings in walls	Not allowed	N/A	< 3 feet
	Unlimited	0 hours	3 feet[a]
Penetrations	All	Comply with Section R302.4	< 3 feet
		None required	3 feet[a]

For SI: 1 foot = 304.8 mm.
N/A = Not Applicable
a. For residential subdivisions where all *dwellings* are equipped throughout with an automatic sprinkler system installed in accordance with Section P2904, the *fire separation distance* for nonrated exterior walls and rated projections shall be permitted to be reduced to 0 feet, and unlimited unprotected openings and penetrations shall be permitted, where the adjoining *lot* provides an open setback *yard* that is 6 feet or more in width on the opposite side of the property line.
b. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave if fireblocking is provided from the wall top plate to the underside of the roof sheathing.
c. The roof eave fire-resistance rating shall be permitted to be reduced to 0 hours on the underside of the eave provided that gable vent openings are not installed.

Reason:

NAHB urges all state and local jurisdictions to adopt the 2012 International Residential Code with this amendment to the fire separation distance requirements for exterior walls. For years, NAHB has asked the IRC code committee to return to the requirements found in the 2003 IRC. During the supplemental code cycle, the fire separation distances were increased by 2 feet without any scientific data or reports that proved the allowable distance found in the 2003 IRC contributed to any increase in exposure fires from one dwelling to another.

To this day, there are no known reports or studies that demonstrate the previously allowed 3-foot separation distance from the property line and 6-foot separation between structures failed to provide the minimum required safe distance.

Return to Residential

2. Self Closing Devices

This amendment removes the mandatory requirements for all doors separating the garage from the interior dwelling to be equipped with a self-closing and latching device.

Revise as follows:

R302.5.1 Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors~~, equipped with a self-closing device~~.

Reason:

NAHB strongly disagrees with the new requirement for door closures on openings between the garage and the house. For many years, proponents argued that fires that originate in the garage could pass through these openings but failed to provide any reliable data or statistics. As a result, the committee and the governmental members repeatedly disapproved this requirement.

During the 2009-10 code development process, the proponents returned with a new reason to prevent the spread of carbon monoxide from vehicles and the by-products produced by burning thermoplastics. While the proponents were able to produce a extremely lengthy dissertation on the hazards of carbon monoxide and the number of false alarms created by carbon monoxide detectors, nowhere in their written or oral testimony did they link any statistical substantiation to need for closures on these openings nor has there been any other evidence produced by other parties.

Return to Residential

3. Stair Geometry (8 ¼ Inch Riser)

This amendment revises the 2012 IRC to return stair geometry to the 8 ¼-inch riser by 9-inch tread depth of the 2006 IRC.

Revise as follows:

R311.7.5 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.
R311.7.5.1 Risers. The riser height shall be not more than 8 ¼ inch (210mm) ~~7 3/4 inches (196 mm)~~. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that the openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the passage of a 4-inch-diameter (102 mm) sphere.

Exceptions:

1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.5.2 Treads. The tread depth shall be not less than 9 inches (229mm) ~~10 inches (254 mm)~~. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

Reason:

This amendment retains the stair geometry requirements allowed under the Building Officials and Code Administrators National Building Code (BOCA). These dimensions are still accepted by many state and local jurisdictions across the country.

These dimensions, originally accepted in the first draft of the IRC and the historic dimensions in the Council of American Building Official's CABO One- and Two-family Building Code, adequately provide for stair safety in residential occupancies. No sound documentation or data has ever been presented demonstrating these proposed dimensions are any less safe or are a contributing factor in accidental residential falls than a stair geometry of 7 ¾"x 10".

The safety benefits of the 7 ¾" riser and 10" tread stair geometry are technically unsubstantiated and are not practical in many home designs. If the footprint of the house must be increased to accommodate the additional space needed, adequately sized living spaces are sacrificed without any demonstrated gain. This can lead to an economic hardship on first-time home buyers of smaller homes, and in particular for construction on smaller lots, infill projects, and townhomes.

As outlined in Section R101.3 of the IRC, the code is to provide minimum requirements for occupant safety and health. There is adequate substantiation to show that 8¼-inch x 9 inch geometry provides this minimum level of occupant safety.

Notes/additional background:

Prior to the Building Officials and Code Administrators 1996 BOCA National Building Code, and the 1995 CABO One-and-Two Family Building Code, stair geometry requirements were set at the 8¼" x 9" dimensions.

An alternative amendment is available for jurisdictions that wish to retain the use of past UBC requirements of an 8-inch maximum riser height and 9-inch minimum tread depth. For that amendment, please see suggested amendment "Stair Geometry (8" x 9")".

NAHB Policy on Stair Geometry Standards states: NAHB's Board of Directors recommends that all state and local governments which adopt the National Building Code (BOCA) and the Council of American Building Officials (CABO) model building codes, postpone the adoption of any new stair geometry. Also, NAHB's Board of Directors calls on all state and local governments that automatically adopt BOCA and CABO model building codes to amend the 1996 and 1995 editions respectively to continue the use of the 1993 BOCA and CABO model codes as they relate to stair geometry provisions. Also, NAHB's Board of Directors urges all state and local affiliated Home Builders Associations to contact state and local code authorities and persuade them to postpone the adoption of the new CABO and BOCA stair geometry standard. Also, NAHB's Board of Directors calls on NAHB to continue to vigorously pursue the adoption of a stair geometry standard consistent with the 1993 BOCA Code.

This amendment retains the provision for the installation of window opening limiting devices or window fall prevention devices where they are installed, and deletes the reference requiring these devices based on a window sill height. This change allows the builder and the building official to use their judgment for when these devices shall be installed and ensures that where these devices are provided, they conform to the referenced industry standard.

Return to Residential

4. Stair Geometry (8-Inch Riser)

This amendment revises the Internal Residential Code to coincide with the stair geometry to 8-inch riser by 9-inch tread depth as found in the UBC.

Revise as follows:

R311.7.5 Stair treads and risers. Stair treads and risers shall meet the requirements of this section. For the purposes of this section, dimensions and dimensioned surfaces shall be exclusive of carpets, rugs or runners.
R311.7.5.1 Risers. The riser height shall be not more than 8 inches (210 mm)~~7 3/4 inches (196 mm)~~. The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm). Risers shall be vertical or sloped from the underside of the nosing of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted provided that the openings located more than 30 inches (762 mm), as measured vertically, to the floor or grade below do not permit the passage of a 4-inch-diameter (102 mm) sphere.

Exceptions:

1. The opening between adjacent treads is not limited on spiral stairways.
2. The riser height of spiral stairways shall be in accordance with Section R311.7.10.1.

R311.7.5.2 Treads. The tread depth shall be not less than 9 inches (229mm) ~~10 inches (254 mm)~~. The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than 3/8 inch (9.5 mm).

Reason:

This amendment retains the stair geometry requirements allowed under the Uniform Building Code (UBC). This amendment allows the continued use of the 8" x 9" geometry, the historically accepted requirement of many other state and local jurisdictions across the country. Many others actually adopt stair geometry requirements of 8 ¼" x 9".

The 8" x 9" geometry has always adequately provided for occupant safety in residential occupancies. No sound documentation or data has ever been presented demonstrating it is any less safe or a contributing factor in accidental residential falls than a stair geometry of 7 ¾" x 10" or other even more stringent geometries.

The safety benefits of the 7 ¾" riser and 10" tread stair geometry are technically unsubstantiated and are not practical in many home designs. If the footprint of the house must be increased to accommodate the additional space needed, adequately sized living spaces are sacrificed without any demonstrated gain. This can lead to an economic hardship on first-time home buyers of smaller homes, and in particular for construction on smaller lots, infill projects, and townhomes.

As outlined in Section R101.3 of the IRC, the code provides minimum requirements for occupant safety and health. There is adequate substantiation to show that an 8" x 9" geometry provides this minimum level of occupant safety.

Notes/additional background:
This is an alternative amendment to accommodate those jurisdictions accustomed to or that wish to retain the use of past UBC requirements of an 8-inch maximum riser height and a 9-inch minimum tread depth.

Prior to changes in 1996 BOCA and 1995 CABO One-and-Two Family Building Code, stair geometry requirements were set at an 8 ¼ inch maximum for risers and a 9-inch minimum tread depth. For these dimensions, please see suggested amendment "Stair Geometry (8 ¼" x 9")" which is consistent with NAHB policy.

NAHB Policy on Stair Geometry Standards states: NAHB's Board of Directors recommends that all state and local governments which adopt the National Building Code (BOCA) and the Council of American

Building Officials (CABO) model building codes, postpone the adoption of any new stair geometry. Also, NAHB's Board of Directors calls on all state and local governments that automatically adopt BOCA and CABO model building codes to amend the 1996 and 1995 editions respectively to continue the use of the 1993 BOCA and CABO model codes as they relate to stair geometry provisions. Also, NAHB's Board of Directors urges all state and local affiliated Home Builders Associations to contact state and local code authorities and persuade them to postpone the adoption of the new CABO and BOCA stair geometry standard. Also, NAHB's Board of Directors calls on NAHB to continue to vigorously pursue the adoption of a stair geometry standard consistent with the 1993 BOCA Code.

Return to Residential

5. Guard Requirement

This amendment reinstates the guard requirement only for those areas where the elevation difference from the walking edge to the ground directly below is more than 30 inches.

Revise as follows:

R312.1.1 Where required. Guards shall be located along open-sided walking surfaces of all decks, porches, balconies, including stairs, ramps and landings that are located more than 30 inches measured vertically to the floor or grade below. ~~at any point within 36 inches (914 mm) horizontally to the edge of the open side~~ Insect screening shall not be considered as a guard.

Reason:

This amendment retains the provisions of the 2006 IRC, where guardrails were required when the elevation difference between the walking surface and the floor or grade directly below was greater than 30 inches. The 2012 IRC now requires a guardrail where the elevation difference is greater than 30 inches from the walking surface to a horizontal point 36 inches adjacent to the leading edge of the walking surface to the grade or floor below. This change will now require the building official to carry a four-foot level to conduct inspections.

During the 2007/2008 code development cycle, the proponent referred to work conducted and reports written by the ICC Code Technology Committee (CTC). At no time during the public hearing, nor the Final Action Hearing was any technical justification presented to substantiate the change requiring the building official to measure 36 inches away from the leading edge of the walking surface or tread to determine when a guardrail should or should not be required. After reviewing the many reports from the CTC website, it is still unclear from where the 36- inch requirement was derived. There are no studies that can support claims that this will have an effect on reducing possible injuries. While the proponent promotes this as a means for consistent enforcement of the guard requirements, there is no evidence of increased risk to the safety of the occupant if the current method of measuring from the edge of the walking surface to grade below is used.

Furthermore, the new language requires a guardrail to be applied to any open-sided walking surface. This could very well be interpreted by building officials to include driveways, landscaped walkways, retaining walls and other elevated surfaces used for the purpose of walking. This change substantially expands the areas needing to be equipped with guards beyond the previous edition of the code.

Return to Residential

6. Window Fall Protection Devices

This amendment deletes the language that requires window fall protection devices to be installed and replaces it with language that governs how they must be installed when provided.

Revise as follows:

R312.2 Window fall protection. Where window fall protection devices are provided, the device shall be ~~provided~~ installed in accordance with Sections R312.2.1 ~~and R312.2.2.~~

R312.2.1 ~~Window sills.~~ ~~In dwelling units, where the top of the sill of an operable window opening is located less than24 inches (610 mm) above the finished floor and greater than 72 inches (1829 mm) above the finished grade or other surface below on the exterior of the building, the operable window shall comply with one of the following:~~
~~1.Operable windows with openings that will not allow a 4-inch-diameter (102 mm) sphere to pass through the opening where the opening is in its largest opened position.~~
~~2.Operable windows that are provided with window fall prevention devices that comply with ASTM F 2090.~~
~~3.Operable windows that are provided with window opening control devices that comply with SectionR312.2.2.~~

~~**R312.2.2**~~ **Window opening control devices.** Window opening control devices shall comply with ASTM F 2090.The window opening control device, after operation to release the control device allowing the window to fully open, shall not reduce the net clear opening area of the window unit to less than the area required by Section R310.2.1.

Reason:

This amendment retains the provision for the installation of window opening limiting devices or window fall prevention devices where they are installed, and delete the reference of requiring these devices based on a window sill height. This change allows the builder and the building official to use their judgment on when these devices shall be installed and insure that where these devices are provided they will conform with the referenced industry standard.

During the 2007/2008 code development cycle and the ICC Code Technology Committee (CTC) meetings, the Window and Door Manufacturers Association (WDMA) presented credible information that raised questions and concerns regarding the established minimum window sill heights. Despite the Consumer Product Safety Commission reports indicating a decrease in the number of injuries and deaths from children falling from windows, WDMA had discovered that in Denver, one of the few areas in the country that has had a minimum sill height requirement for the past decade, the number of child injuries and deaths were increasing. One of the many concerns is that there is the potential for the occupant to place furniture or other objects under the window that a child could climb upon. It is our opinion that the CTC needs to earnestly review the information presented by the WDMA and reconsider its position on minimum window sill heights.

Furthermore, the recommendation to require window opening limiting devices contradicts conclusions of the CTC Work Study Group. It was clear to many in the group that public education was the most effective means of reducing the number of falls by children through windows.

Return to Residential

7. Residential Fire Sprinklers

This amendment would delete the mandatory requirement for residential sprinklers from the IRC.

Revise as follows:

Delete Section R313 entirely

~~**SECTION R313**~~
~~**AUTOMATIC FIRE SPRINKLER SYSTEMS**~~
~~**R313.1 Townhouse automatic fire sprinkler systems.** An automatic residential fire sprinkler system shall be installed in townhouses.~~
~~**Exception:** An automatic residential fire sprinkler system shall not be required where additions or alterations are made to existing townhouses that do not have an automatic residential fire sprinkler system installed.~~
~~**R313.1.1 Design and installation**. Automatic residential fire sprinkler systems for townhouses shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~
~~**R313.2 One- and two-family dwellings automatic fire systems.** An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.~~
~~**Exception:** An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system.~~
~~**R313.2.1 Design and installation.** Automatic residential fire sprinkler systems shall be designed and installed in accordance with Section P2904 or NFPA 13D.~~

Reason:

Since the inclusion of the mandatory requirement for residential sprinklers in the 2009 IRC, more than 42 states have amended or passed legislation prohibiting communities from mandating residential sprinklers in new one- and two-family dwellings. NAHB urges all state and local communities to oppose the mandatory requirement and continue to support the voluntary installation of residential sprinklers as the buyer's choice.

Fire sprinkler mandates should remain an option for state and local jurisdictions. This option is already adequately provided for in the appendix of the 2006 edition of the IRC.

Should a jurisdiction wish to mandate residential sprinkler systems, a provision for them to do so is now available in the 2006 IRC via adoption of Appendix P. Allowing state and local jurisdictions to decide for themselves based on the specific needs and concerns of their communities is the most appropriate approach. The ICC overwhelmingly endorsed that approach at the previous Final Action Hearings, where inclusion of the appendix was approved for that very reason – even by the building officials who do believe sprinklers should be mandated – and that action should be honored and upheld.

The IRC clearly states, "The purpose of this code is to provide minimum requirements to safeguard life or limb, health and public welfare." The IRC Commentary states that the IRC is intended to provide reasonable minimum standards that reduce the factors of hazardous and substandard conditions that would otherwise put the public at risk to damaging their health, safety or welfare. Any imposition of a mandated sprinkler requirement is excessive and is not a reasonable minimum standard for meeting the "purpose" of the code. It is important to remember that the code is composed of many life-safety standards that have been proven to meet the "purpose" of the code. Proposals to mandate sprinklers as a requirement in the body of the IRC rather than an adoptable appendix exceed this "purpose" and should not approved.

Return to Residential

8. Protection of Building Envelope

This amendment eliminates the requirement to provide an exterior-rated door at the top of a stairway that is enclosed by breakaway walls and provides access to a dwelling elevated on piers or piles in a coastal flood zone.

Revise as follows:

~~**R322.3.5.1 Protection of building envelope.** An exterior door that meets the requirements of Section R609 shall be installed at the top of stairs that provide access to the building and that are enclosed with walls designed to break away in accordance with Section R322.3.4.~~

Reason:

This amendment deletes the requirement added in the 2012 IRC that an exterior door be provided at the top of a stairway enclosed by breakaway walls and providing access to a dwelling located in a Coastal A Zone or Zone V special flood hazard area and elevated on piers or piles. While having a door at the top of such a stair may be good practice, the additional requirements associated with it being an exterior door are overly conservative, particularly if the door at the bottom of the enclosed stair is also an exterior door. By requiring compliance with all of the requirements of Section R609, the specified door would need to have a design pressure rating consistent with the design wind speed for the site, the door frame would need to be stiffened to resist the loads from such a door, proper anchorage of the door to the frame would need to be provided, and the door opening would need head, jamb, and sill flashing. The minimum added cost to provide a standard exterior door with flashing in lieu of a standard interior door is around $300; a hurricane wind-rated door would add an additional $200-$300 to the minimum costs.

It is noted that this requirement does not appear in the basic construction requirements of the National Flood Insurance Program in accordance with 44 CFR 60.3. It is also not specified as a practice that a community would earn credit for mandating and enforcing under FEMA's Community Rating Service, and would not lead to discounted flood insurance premiums.

Return to Residential

9. Solar Photovoltaic Roof Systems

This amendment corrects language copied from the International Fire Code to address solar photovoltaic panels installed on the roof of a one- and two-family dwelling.

Revise as follows:

R324.7 Access and pathways. Roof access, pathways and spacing requirements shall be provided in accordance with Sections R324.7.1 through R324.7.2.5.

Exceptions:

1. Detached garages and accessory structures to one and two-family *dwellings* and *townhouses,* such as parking shade structures, carports, solar trellises and similar structures.
2. Roof access, pathways and spacing requirements need not be provided where an alternative ventilation method *approved* by the code official has been provided or where the code official has determined that vertical ventilation techniques will not be employed.

R324.7.1 Roof access points. Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires or signs.

R324.7.2 Solar photovoltaic systems. Solar photovoltaic systems shall comply with Sections R324.7.2.1 through R324.7.2.5.

R324.7.2.1 Size of solar photovoltaic array. Each photovoltaic array shall be limited to 150 feet by 150 feet (45 720 by 45 720 mm). Multiple arrays shall be separated by a clear access pathway not less than 3 feet (914 mm) in width.

R324.7.2.2 Hip roof layouts. Panels and modules installed on *dwellings* with hip roof layouts shall be located in a manner that provides a clear access pathway not less than 3 feet (914 mm) in width from the eave to the ridge on each roof slope where panels and modules are located. The access pathway shall be located ~~at a structurally strong location on the building capable of supporting the live load of fire fighters~~ along the structural members of the roof framing to support any person accessing the roof.

Exception: These requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (16.6 percent) and less.

R324.7.2.3 Single ridge roofs. Panels and modules installed on *dwellings* with a single ridge shall be located in a manner that provides two, 3-foot-wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels or modules are located.

Exception: This requirement shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (16.6 percent) and less.

R324.7.2.4 Roofs with hips and valleys. Panels and modules installed on *dwellings* with roof hips or valleys shall not be located less than 18 inches (457 mm) from a hip or valley where panels or modules are to be placed on both sides of a hip or valley. Where panels are to be located on one side only of a hip or valley that is of equal length, the 18-inch (457 mm) clearance does not apply.

Exception: These requirements shall not apply to roofs with slopes of 2 units vertical in 12 units horizontal (16.6 percent) and less.

~~**R324.7.2.5 Allowance for smoke ventilation operations.** Panels and modules installed on dwellings shall not be located less than 3 feet (914 mm) below the roof ridge to allow for fire department smoke ventilation operations.~~

~~**Exception:** Where an alternative ventilation method approved by the code official has been provided or where the code official has determined that vertical ventilation techniques will not be employed, clearance from the roof ridge is not required.~~

Reason:

This change is suggested based on two reasons. First, there is no reference in any of the ICC codes which specifically quantifies the weight of a fully geared up fire fighter. In addition, the provision for the access and the ability of the roof to support the live load of an individual should not be limited to the fire service. Solar PV panels will require cleaning and maintenance by the installer, electricians will need to

periodically access it to repair or replace components, and owners will need to clear debris and perform other housekeeping items. Secondly, while the IRC does take in to consideration the safety of occupants and fire service personnel, the IRC is not a fire service manual and should not include operational requirements for attacking fires from an offensive or defensive position. The IRC is a standalone building code for one- and two family dwellings and townhouses and it is not a fire operation manual.

Return to Residential

10. Mezzanines

This amendment removes IBC language that does not apply to mezzanines within one- and two family dwellings.

Revise as follows:

R325 MEZZANINES

R325.1 General. Mezzanines shall comply with Section R325.

R325.2 Mezzanines. The clear height above and below mezzanine floor construction shall be not less than 7 feet (2134 mm).

R325.3 Area limitation. The aggregate area of a mezzanine or mezzanines shall be not greater than one-third of the floor area of the room or space in which they are located. The enclosed portion of a room shall not be included in a determination of the floor area of the room in which the *mezzanine* is located.

R325.4 Means of egress. The means of egress for mezzanines shall comply with the applicable provisions of Section R311.

R325.5 Openness. Mezzanines shall be open and unobstructed to the room in which they are located except for walls not more than ~~42 inches (1067 mm)~~ 36 inches (914 mm) in height, columns and posts.

> ~~**Exceptions:**~~
> ~~1. Mezzanines or portions thereof are not required to be open to the room in which they are located, provided that the aggregate floor area of the enclosed space is not greater than 10 percent of the mezzanine area.~~
> ~~2. In buildings that are not more than two stories above *grade plane* and equipped throughout with an automatic sprinkler system in accordance with NFPA 13R, Appendix S, a mezzanine having two or more means of egress shall not be required to be open to the room in which the mezzanine is located.~~

Reason:

During the code hearings, the residential code committee approved a modified version of the proposal which extracted language dealing with mezzanines directly from the IBC. The committee modified the height of the wall between the mezzanine and the room below to have walls no greater than 36 inches in height to be coordinated with the guard heights in the IRC.

This change also deletes the two exceptions to the openness requirements of the mezzanine, which were extracted directly from the IBC and have no bearing on a mezzanine that would be constructed in a one- and two family dwelling or townhouse. The second exception also references automatic sprinklers system that are inappropriate for the IRC (NFPA 13R is four-story multifamily).

Return to Residential

11. Foundation Anchorage

This amendment provides an exception to the requirement for attaching bottom plates of braced wall panels on the interior of a dwelling to foundations with anchor bolts. The exception applies in low-wind, low-seismic areas where gypsum board is used as the bracing method for the interior wall in question.

Revise as follows:

R403.1.6 Foundation anchorage. Wood sill plates and wood walls supported directly on continuous foundations shall be anchored to the foundation in accordance with this section.

Cold-formed steel framing shall be anchored directly to the foundation or fastened to wood sill plates anchored to the foundation. Anchorage of cold-formed steel framing and sill plates supporting cold-formed steel framing shall be in accordance with this section and Section R505.3.1 or R603.3.1.

Wood sole plates at all exterior walls on monolithic slabs, wood sole plates of *braced wall panels* at building interiors on monolithic slabs and all wood sill plates shall be anchored to the foundation with minimum 1/2-inch diameter (12.7 mm) anchor bolts spaced a maximum of 6 feet (1829 mm) on center or *approved* anchors or anchor straps spaced as required to provide equivalent anchorage to 1/2-inch-diameter (12.7 mm) anchor bolts. Bolts shall extend a minimum of 7 inches (178 mm) into concrete or grouted cells of concrete masonry units. The bolts shall be located in the middle third of the width of the plate. A nut and washer shall be tightened on each anchor bolt. There shall be a minimum of two bolts per plate section with one bolt located not more than 12 inches (305 mm) or less than seven bolt diameters from each end of the plate section. Interior bearing wall sole plates on monolithic slab foundations that are not part of a *braced wall panel* shall be positively anchored with approved fasteners. Sill plates and sole plates shall be protected against decay and termites where required by Sections R317 and R318.

Exceptions:

1. Walls 24 inches (610 mm) total length or shorter connecting offset braced wall panels shall be anchored to the foundation with a minimum of one anchor bolt located in the center third of the plate section and shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).

2. Connection of walls 12 inches (305 mm) total length or shorter connecting offset braced wall panels to the foundation without anchor bolts shall be permitted. The wall shall be attached to adjacent braced wall panels at corners as shown in Item 9 of Table R602.3(1).

3. Where the basic wind speed in accordance with Figure R301.2(4)A does not exceed 115 miles per hour (51 m/s), the seismic design category is A or B and Method GB in accordance with Section R602.10 is used for a *braced wall line* on the interior of the dwelling, anchor bolts shall not be required for the wood sole plates of the *braced wall panels*. Positive anchorage with approved fasteners shall be provided.

Reason:

This amendment revises the language for anchorage of light-frame wood stud walls to the foundations of the house. As currently stated, the provisions require anchor bolts for the portions of a wall on the interior of a dwelling that are designated as braced wall panels for a braced wall line passing through the dwelling. To provide the required 7–inch embedment depth, a thickened slab or other continuous footing would be necessary. Chapters 4 and 6 of the IRC do not explicitly require a continuous foundation in these locations in low-wind, low-seismic areas, and they are not traditionally provided. If interpreted and enforced by plan reviewers and inspectors in these areas, disputes and project delays will result and/or home owners will incur significant additional construction costs.

The ICC Ad-Hoc Committee on Wall Bracing revised this section during the 2007/2008 code cycle with the intent of ensuring that sufficient anchorage is provided along braced wall lines inside a dwelling to transfer lateral loads to either monolithic (thickened) slab foundations or continuous footings. While NAHB agrees that providing a continuous load path is important, the new language is overly broad in its

application and not technically justified for many common conditions. The typical bracing method used for braced wall lines on the interior of a one- or two-story dwelling in a low-wind, low-seismic area is Method GB, consistent with the use of gypsum board as the typical interior wall finish material. The allowable shear capacity for Method GB when used on both sides of a braced wall is 200 plf (pounds per linear foot). The standard fastener schedule, Table R602.3(1), specifies 3-16d nails at 16" spacing for fastening the bottom plate of a braced wall panel on the interior of a dwelling to floor framing below (such as a raised floor system over a crawlspace or pier-and-beam foundation). This standard nailing provides a 200plf allowable capacity, as would many typical post-installed anchors (e.g. wedge or expansion anchors) that are short enough to be installed in just a slab-on-grade without the need for thickened footings, or even power-actuated fasteners. 1/2" diameter anchor bolts at 6-foot spacing are not necessary for the proper anchorage of these walls.

The proposed amendment provides an exception to the requirement that an interior wall that also used as part of a braced wall line be fastened to a slab-on-grade with anchor bolts, rather than other methods of making a "positive connection" such as wedge or expansion anchors, power fasteners, or concrete nails. The exception is limited to areas of low wind and low seismic hazards and to walls braced using gypsum board, with its lower allowable shear capacity.

Return to Residential

12. Comprehensive Energy Amendment

This is a comprehensive amendment, providing flexibility for meeting energy code requirements while maintaining energy performance. It provides a "true" unrestricted performance path that allows for cost-optimized construction of an energy-equivalent house utilizing energy neutral options. Incorporating; building tightness tradeoff, equipment efficiency tradeoff and window area tradeoff. ***(Includes Amendments 17, 25, 26)***

Revise as follows:

N1102.4 (R402.4) Air leakage ~~(Mandatory)~~. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections N1102.4.1 through N1102.4.4.

N1102.4.1 (R402.4.1) Building thermal envelope. The *building thermal envelope* shall comply with Sections N1102.4.1.1 and N1102.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

N1102.4.1.1 (R402.4.1.1) Installation (Mandatory). The components of the *building thermal envelope* as listed in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table N1102.4.1.1, as applicable to the method of construction. Where required by the *building official*, an *approved* third party shall inspect all components and verify compliance.

N1102.4.1.2 (R402.4.1.2) Testing (Mandatory). The building or dwelling unit shall be tested ~~and verified as having an air leakage rate of not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8~~ for air leakage. Testing shall be c in accordance with ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inches w.g. (50 Pascals) 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*. 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, if installed at the time of the test, shall be open;
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
6. Supply and return registers, if installed at the time of the test, shall be fully open.

N1102.4.1.3 (R402.4.1.3) Leakage rate (Prescriptive). The building or dwelling unit shall have an air leakage rate not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8, when tested in accordance with Section N1102.4.1.2.

TABLE N1105.5.2(1) [R405.5.2(1)]
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Vertical fenestration other than opaque doors	Total area[b] = ~~(a) The proposed glazing area; where proposed glazing area is less than 15% of the conditioned floor area.~~ ~~(b)~~ 15% of the conditioned floor area~~; where the proposed glazing area is 15% or more of the conditioned floor area.~~ Orientation: equally distributed to four cardinal compass orientations (N, E, S, & W) U-factor: from Table R402.1.3 SHGC: From Table R402.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used. Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design) External shading: none	~~As proposed~~ As proposed As proposed As proposed 0.92-(0.21 × SHGC as proposed) As proposed
Heating Systems[d, e]	~~As proposed for other than electric heating without a heat pump, Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC-Commercial Provisions.~~ Fuel type: same as proposed design Efficiencies: Electric: air-source heat pump with prevailing federal minimum standards Nonelectric furnaces: natural gas furnace with prevailing federal minimum standards Nonelectric boilers: natural gas boiler with prevailing federal minimum standards Capacity: sized in accordance with Section N1103.7	~~As proposed~~ As proposed As proposed As proposed As proposed As proposed
Cooling Systems[d, f]	~~As proposed~~ Fuel type: Electric Efficiency: in accordance with prevailing federal minimum standards Capacity: sized in accordance with Section N1103.7	As proposed As proposed
Service Water Heating[d, e, f]	~~As proposed~~ Fuel type: same as proposed design Efficiency: in accordance with prevailing federal minimum standards Use: gal/day = 30 + 10 × *Nbr* Tank temperature: 120°F ~~Use: same as proposed design~~	~~As proposed~~ As proposed Same as standard reference Same as standard reference ~~gal/day = 30 + (10 × *Nbr*)~~

Footnotes remain unchanged

Reason:

This is a comprehensive amendment, providing flexibility for meeting energy code requirements while maintaining energy performance. It provides a "true" unrestricted performance path that will allow for cost-optimized construction of an energy-equivalent house.
The amendment provides alternatives that encourage innovation and the use of materials and equipment

which will result in a home which is at least equivalent of that prescribed in the energy code.

The modifications will reinstate many of the changes made since the 2006 IRC Chapter 11. Those changes restricted the flexibility of the builder/designer to construct an energy-efficient code compliant home while still meeting the energy performance levels of the current code.

Items included in this amendment:

- *Energy neutral building tightness trade-offs*
- *Credit for more energy-efficient buildings which incorporate reduced window area*
- *Energy neutral heating, cooling and water heating equipment efficiency trade-offs*

Currently all homes have a mandatory requirement to be equal to or tighter than 3ACH50 or 5ACH50, depending on climate zone. Proposed changes will allow for homes to be less tight provided other efficiency changes are made to the house which offset energy lost due to the change in air infiltration.

Currently, when conducting a performance analysis, a building glazing area greater than 15% of the conditioned floor area (CFA) is penalized for using more energy. However, a building with less than 15% window to CFA does not get credit for saving energy. This amendment allows the builder/designer to optimize window area that is both energy efficient and pleasing to the consumer.

Return to Residential

13. Remove Mandatory Requirement for Above Code Programs

This amendment eliminates the need to meet all “Mandatory” requirements identified by the IRC Chapter 11 as long as the program exceeds the energy-efficiency levels required.

Revise as follows:

N1101.4 (R102.1.1) Above code programs. The *building 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 in compliance with this code. ~~The requirements identified as “mandatory” in Chapters 4 and 5 of this code, as applicable, shall be met.~~

Reason:

The key element of an above code program is that it must meet or exceed the energy-efficiency requirements of the IRC Chapter 11. Requiring such a program to also meet the detailed prescriptive requirements labeled as “mandatory” defeats the purpose of performance based above-code program. This amendment will allow flexibility in the methodology used for any above-code program to meet or exceed the minimum energy-efficiency requirements.

Return to Residential

14. Overhang Credit for SHGC (Climate Zones 1-4)

This amendment allows the use of overhangs to meet the solar heat gain coefficient requirements within the IECC.

Add new text as follows:

N1101.9 (R202) Defined Terms.

PROJECTION FACTOR. The ratio of the horizontal depth of an overhang, eave, or permanently attached shading device, divided by the distance measured vertically from the bottom of the fenestration glazing to the underside of the overhang, eave, or permanently attached shading device.

N1102.3.2.1 (R402.3.2.1) Glazed fenestration SHGC exception. In Climate Zones 1 through 4, permanently shaded vertical fenestration shall be permitted to satisfy the SHGC requirements. The projection factor of an overhang, eave, or permanently attached shading device shall be greater than or equal to the value listed in table N1102.2.3.1 for the appropriate orientation. The minimum projection shall extend beyond each side of the glazing a minimum of 12 inches (0.3 m). Each orientation shall be rounded to the nearest cardinal orientation (+/-45 degrees or 0.79 rad) for purposes of calculations and demonstrating compliance.

TABLE N1102.2.3.1 (R402.3.2.1)
MINIMUM PROJECTION FACTOR REQUIRED BY ORIENTATION FOR SHGC EXCEPTION

ORIENTATION	PROJECTION FACTOR
North	>=0.40[a]
South	>=0.20
East	>=0.50
West	>=0.50

a. *For the north orientation, a vertical projection located on the west-edge of the fenestration with equivalent PF >= 0.15 shall also satisfy the minimum projection factor requirement.*

Reason:

The concept of using shading to reduce heat gain is integral to the architecture of some of the oldest world cultures. Shading in modern construction offers many possibilities. This proposed code change allows for the use of overhangs to meet the solar heat gain coefficient requirements within the IRC Chapter 11. Permanent exterior shading features such as overhangs are allowed to be used in IECC Chapter 5 as a prescriptive trade-off to meeting SHGC requirements within the code. The calculation for determining the projection factor for overhangs has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. Shading devices are allowed if using the 2003 IECC and are allowed as a trade-off under the commercial provisions of the IECC. Allowing flexibility in meeting the solar heat gain coefficient through the use of proven shading alternatives will increase the usability of the code for the building and design community while ensuring that the new fenestration is energy efficient. When credit for shading is permitted, it encourages an integrated approach to building designs, energy use, construction materials, renewable resources particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted.

Return to Residential

15. Multi-Family Air Leakage Testing

This amendment adds an exception to allow compliance to the air barrier requirements and allow an exception for testing the entire building as a whole, as is permitted for commercial buildings.

Revise as follows:

N1102.4 (R402.4) Air leakage (Mandatory). The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Section N1102.4.1 through N1102.4.4.

Exception: Two family dwelling units and townhouses shall be permitted to comply with IECC Section C402.5

Reason:

Air-tightness testing for single-family detached homes is very straightforward; however, it is much more difficult to accurately test attached dwelling units, including multifamily buildings. The IECC treats low-rise multi-family buildings of 3 stories or less like single-family homes and multifamily buildings of 4 stories or more like commercial buildings. Regardless of height, all multifamily buildings have the same air-tightness testing complications, such as: Does the entire building need to be tested at one time? What about multifamily buildings with open corridors? Does every dwelling need to be tested? Can the leakages be averaged between units? Is the leakage tested only to the "outside" or should it include leakage to adjacent units?

By approving this amendment, low-rise multifamily buildings and attached single-family dwellings will avoid these complications while still being held to the same level of performance as high-rise (R-2) residential and commercial buildings.

Return to Residential

16. Air Leakage Rate Correction (Climate Zones 1-8)

This amendment modifies the requirement from 3 air changes per hour (ACH) to 5 ACH in climate zones 1-8.

Revise as follows:

N1102.4.1.2 (R402.4.1.2) Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding five air changes per hour in Climate Zones 1 ~~and 2, and three air changes per hour in Climate Zones 3~~ through 8. Testing shall be conducted in accordance with ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inches w.g. (50 Pascals). 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*.

Table N1105.5.2(1) [R405.5.2(1)]
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

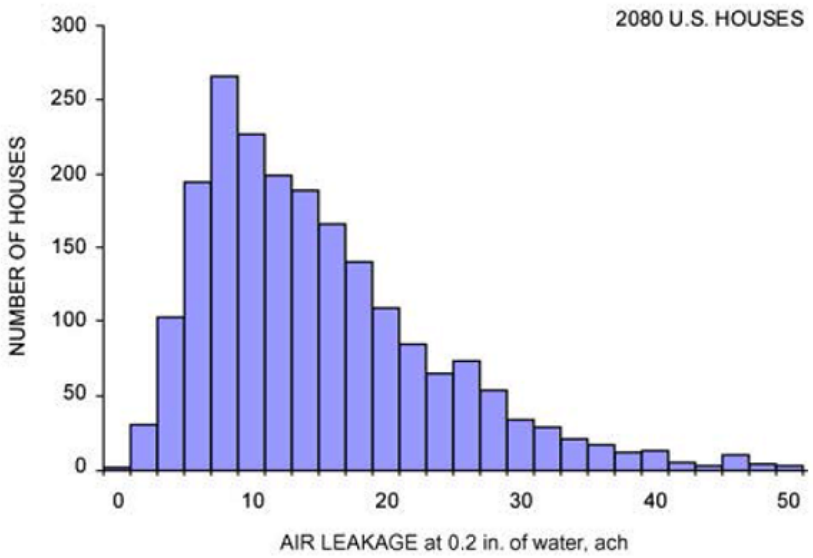
BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	Air leakage rate of 5 air changes per hour in Climate Zones 1 ~~and 2, and 3 air changes per hour in Climate Zones 3~~ through 8 at a pressure of 0.2 inches w.g (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than 0.01 × *CFA* + 7.5 × (*Nbr* + 1) where: *CFA* = conditioned floor area *Nbr* = number of bedrooms Energy recovery shall not be assumed for mechanical ventilation.	For residences that are not tested, the same air leakage rate as the standard reference design. For tested residences, the measured air exchange rate[a]. The mechanical ventilation rated shall be in addition to the air leakage rate and shall be as proposed.

Footnotes remain unchanged

Reason:

Building tightness is an important part of an energy-efficient and comfortable house. However, 3 air changes(ACH) per hour at 50 Pascals is an extremely low target tightness, especially for smaller homes. The ASHRAE Handbook of Fundamentals shows that around 8% of U.S. homes achieve 3 ACH or less, 13% achieve 4 and less than 23% achieve 5. The proposed 5 ACH while still an aggressive tightness level will provide a tight, comfortable, energy-efficient home.

2013 ASHRAE Handbook—Fundamentals



[Return to Residential]

17. Air Leakage Trade-Off

This amendment allows builders to trade improvements in other building energy components for less stringent building envelope pressure test results, provides flexibility in meeting the air-tightness requirements and provides options for recovering from an unexpected air-tightness test failure. ***(Part of Amendment # 12)***

Revise as follows:

N1102.4 (R402.4) Air leakage ~~(Mandatory)~~. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections N1102.4.1 through N1102.4.4.

N1102.4.1 (R402.4.1) Building thermal envelope. The *building thermal envelope* shall comply with Sections N1102.4.1.1 and N1102.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

N1102.4.1.1 (R402.4.1.1) Installation (Mandatory)**.** The components of the *building thermal envelope* as listed in Table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table N1102.4.1.1, as applicable to the method of construction. Where required by the *code official*, an *approved* third party shall inspect all components and verify compliance.

N1102.4.1.2 (R402.4.1.2) Testing (Mandatory). The building or dwelling unit shall be tested ~~and verified as having an air leakage rate of not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8~~ for air leakage. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). 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*. 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, if installed at the time of the test, shall be open;
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
6. Supply and return registers, if installed at the time of the test, shall be fully open.

N1102.4.1.3 (R402.4.1.3) Leakage rate (Prescriptive). The building or dwelling unit shall have an air leakage rate not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8, when tested in accordance with Section N1102.4.1.2.

Reason:

These modifications remove the mandatory maximum air-tightness requirement and provide designers and builders the flexibility to trade off building tightness with other performance path measures when using the performance path. Currently the building tightness requirement is "mandatory" and the 3 and 5 ACH tightness levels, even under ideal circumstances, are very difficult to achieve. This amendment will provide energy neutral trade-offs, for expensive and sometimes unattainable requirements, with other building improvements. This amendment does not change the stringency; it only increases its flexibility while achieving the required energy efficiency.

Return to Residential

18. Prescriptive Table Requirements

This amendment replaces 2012 IRC Chapter 11 Tables N1102.1.2 and N1102.1.4 with tables from the 2009 IRC Chapter 11.

Delete Table N1102.1.2 and Table N1102.1.4 in their entirety and replace with the following:

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	1.20	0.75	0.30	30	13	3 / 4	13	0	0	0
2	0.65[j]	0.75	0.30	30	13	4 / 6	13	0	0	0
3	0.50[j]	0.60	0.30	30	13	5 / 8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5 / 10	19	10/13	10, 2ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5[h]	13 / 17	30[g]	10/13	10, 2ft	10/13
6	0.35	0.60	NR	49	20 or 13+5[h]	15 / 19	30[g]	15/19	10, 4ft	10/13
7 and 8	0.35	0.60	NR	49	21	19 / 21	38[g]	15/19	10, 4ft	10/13

For SI: 1 foot = 304.8 mm.

a. R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 x 6 framing cavity such that the R-value is reduced by R-l or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine Zone.

f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

j. For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1608.1.2 of the *International Building Code,* the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

TABLE N1102.1.4 (R402.1.4) EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.75	0.75	0.035	0.082	0.165	0.064	0.360	0.477
3	0.65	0.65	0.035	0.082	0.141	0.047	0.360	0.136
4 except Marine	0.40	0.60	0.030	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	0.35	0.60	0.030	0.057	0.082	0.033	0.059	0.065
6	0.35	0.60	0.026	0.057	0.060	0.033	0.050	0.065
7 and 8	0.35	0.60	0.026	0.057	0.057	0.033	0.050	0.065

a. Non-fenestration U-factors shall be obtained from measurement, calculation or an approved source.

b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except Marine, and the same as the frame wall U-factor in Marine Zone 4 and Zones 5 through 8.

c. Basement wall U-factor of 0.360 in warm-humid locations as defined by Figure 301.1 and Table 301.2.

d. Foundation U-factor requirements shown in Table 402.1.3 include wall construction and interior air films but exclude soil conductivity and exterior air films. U-factors for determining code compliance in accordance with Section 402.1.4 (total*VA* alternative) of Section 405 (Simulated Performance Alternative) shall be modified to include soil conductivity and exterior air films .

Reason:

The increased table values in the 2012 IECC and the 2012 IECC did not show justification for the cost increases from the 2009 IECC. Studies indicate nationally almost a $6,000 increase to the cost of constructing a single-family detached dwelling with a 13-year simple payback. With statistics showing that for every $1,000 increase to the cost of construction nearly 206,000 potential home buyers will not qualify for a mortgage. This, increase disqualifies approximately 1.3 million families from purchasing a home every year. That equates to approximately $24,000,000 in potential taxes revenues never being generated for municipalities.

Return to Residential

19. Basement Wall R-Value/U-Factor Reduction (Climate Zone 5)

This amendment reduces the basement wall R-Value requirement in Climate Zone 5 to a more reasonable R-value based on values that were acceptable to both NAHB and DOE in the 2009 IRC.

Revise as follows:

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGCb,[e]	CEILING R -VALUE	WOOD FRAME WALL R -VALUE	MASS WALL R -VALUEi	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R -VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5h',[i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5h,[i]	13/17	30g	10/13 ~~15/19~~	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10h',[i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE N1102.1.4 (R402.1.4) EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factorb	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	~~0.050~~ 0.059	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

The prescriptive basement wall requirement increased from R-10 to R-15 in the 2012 IRC Chapter 11. Calculations used to justify the change were based on energy models, which had less sophisticated algorithms than Energy Plus, now the preferred modeling software for the Department of Energy (DOE). When using Energy Plus, the energy savings in a 700 square foot basement totaled $7/yr in Chicago (Climate zone 5). The additional cost for this is conservatively estimated at $590. This makes the simple payback in excess of 58 years. This also will create a negative cash flow for the consumer. The values being modified by this amendment are the same as what was proposed by DOE in its proposal EC13 from the 2009 cycle. The excessive values currently in code were not submitted by DOE.

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
5	Chicago, IL	R-10->R-15	$7/yr	$590 ($0.82/ft2)	84 years

Return to Residential

20. Ceiling R-Value/U-Factor Reductions (climate zones 2-5)

This amendment reinstates the appropriate minimum ceiling R-Values in climate zones 2, 3, 4 and 5, those published in the 2009 IRC Chapter 11.

Revise as follows:

TABLE N1102.1.2(R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R -VALUE	WOOD FRAME WALL R -VALUE	MASS WALL R -VALUEi	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R -VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	~~38~~ 30	13	4/6	13	0	0	0
3	0.35	0.55	0.25	~~38~~ 30	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	~~49~~ 38	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	~~49~~ 38	20 or 13+5[h,i]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE N1102.1.4 (R402.1.4)
EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U- Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	~~0.030~~ 0.035	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	~~0.030~~ 0.035	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	~~0.026~~ 0.030	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	~~0.026~~ 0.030	0.060	0.082	0.033	0.050 0.059	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

There were four changes in the Ceiling R-value requirements in the 2012 IECC, none of which are cost effective. An energy and cost analysis was performed to show that the simple paybacks are in the 80-130 year range.

Climate Zone	Representative City	Change	Energy Savings	Incremental Cost	Simple Payback

2	Orlando, FL	R-38->R-30	$10/yr	$1,305	130 years
3	Atlanta, GA	R-38->R-30	$16/yr	$1,305	82 years
4	Richmond, VA	R-49->R-38	$15/yr	$1,379	92 years
5	Indianapolis, IN	R-49->R-38	$15/yr	$1,379	92 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481. Vaulted or cathedralized ceiling are very problematic when trying to achieve R- 49, which is about 16 inches thick. This would require a rafter at least 17" tall (which does not exist) or an insulated panel, which represents a very small portion of the market.

Return to Residential

21. Correct SHGC for Climate Zone 4

This amendment changes the Climate Zone 4 SHGC back to N/R, because a prescriptive restriction for the SHGC of 0.40 in Climate Zone 4 does not save energy.

Revise as follows

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	~~0.40~~ NR	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

Reason:

The addition of a prescriptive restriction for the SHGC of 0.40 was added in the 2012 IECC. This is not a requirement that saves energy. In Climate Zone 4, heating degree days outnumber cooling degree days by about 2 to 3 times. Therefore for most of the year, the "sun is your friend" and solar heat gain is beneficial and reduces heating loads. There are some exceptions to this, but the majority of homes will not benefit from this restriction. The values being modified by this proposal are the same as what was proposed by the Department of Energy in their proposal EC13 from the last cycle. The values currently adopted were an increase from proposals not submitted by the Department of Energy

Return to Residential

22. Wall R-Value/U-Factors Corrections (Climate Zone 3 & 4)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in Climate Zone 3 & 4 published in the 2009 IECC.

Revise as follows:

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	13 ~~20 or 13+5[h,i]~~	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	13 ~~20 or 13+5[h,i]~~	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE N1102.1.4 (R402.1.4) EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	~~0.060~~ 0.84	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	~~0.060~~ 0.84	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

Frame wall requirements in Climate Zone 3 changed from R-13 to R-20, which is not cost effective for the consumer.

Climate Zone	Representative City	Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
3	Atlanta, GA	R-13->R-20	$50/yr	$1,199	24 years
4	Richmond, VA	R-13->R-20	$59/yr	S1,199	20 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481. Not only is the payback is extremely long, but for a consumer, there would be a negative cash flow based on the incremental cost and energy savings. The increase in the monthly mortgage would be $6.43 (@ 5%) and the average monthly energy savings would be $4.17 in zone 3 and $4.92 in zone 4 causing the home owner to pay more in additional monthly mortgage payments than the energy savings returns.

The values being modified by this amendment are the same as what was proposed by the Department of Energy in its proposal EC13 from the last cycle. The values currently adopted were an increase from proposals not submitted by the Department of Energy.

Return to Residential

23. Wall R-Value/U-Factors Corrections (Climate Zone 6-8)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zones 6, 7 & 8 published in the 2009 IRC Chapter 11.

Revise as follows:

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20 or 13+5[h,i] ~~20+5 or 13+10[h,i]~~	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20 or 13+5[h,i] ~~20+5 or 13+10[h,i]~~	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE N1102.1.4 (R402.1.4) EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	~~0.045~~ 0.060	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	~~0.045~~ 0.060	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

The prescriptive wall requirement increased to R-20+R5 in climate zones 6, 7 and 8 of the 2012 IRC Chapter 11. The additional cost for this is estimated at $1,819 for 1,016 square feet of wall. This makes the simple payback between 26 and 55 years depending on the climate zone. This also will create a negative cash flow for the consumer in all cases.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
6	Minneapolis, MN	R-20->R-20+5	$33/yr	$1,819 ($1.79/ft2)	55 years
7	Bemidgi, MN	R-20->R-20+5	$41/yr	$1,819 ($1.79/ft2)	44 years
8	Fairbanks, AK	R-20->R-20+5	$71/yr	$1,819 ($1.79/ft2)	26 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481.

Return to Residential

24. Trade-Off for 2X6 Wall

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies, which have reduced framing factors and R-18 insulation.

Revise as follows:

SECTION R202 GENERAL DEFINITIONS (new)

Framing Factor. The fraction of the total building component area that is structural framing.

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed *R*-value of the insulation shall not be less than the *R*-value specified in the table.

b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.

c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home.
"10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine Zone.

f. Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. First value is cavity insulation, second is continuous insulation or insulated siding, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40 percent or less of the exterior, continuous insulation *R*-value shall be permitted to be reduced by no more than R-3 in the locations where structural sheathing is used – to maintain a consistent total sheathing thickness.

i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.

j. R-18 insulation shall be permitted in place of the R-20 requirement provided the wall *framing factor* is 20% or less or exterior walls with 24" o.c. nominal vertical stud spacing.

Reason:

The ASHRAE Handbook of Fundamentals and ASHRAE Transaction 1995 Volume 101, Part 2 assumes that wood framed walls have a framing factor of 25%. This means that 25% of the wall area consists of structural framing members and the remainder is a cavity suitable for installing insulation. When calculating the U-factor for a wall assembly, a high framing factor increases the overall assembly

U-Factor. Reducing the framing factor also provides an increase in the thermal performance of the wall.

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies which have reduced framing factors and R-18 insulation. Here are the calculations showing equal U-Factors for both assemblies (0.060).

Wall Thermal Resistance by Component	2x6 Wall R-20 25%FF (16" o.c.)			2x6 Wall R-18 20% FF		
	R-Value Studs	R-Value Cavity	Assembly U-Factor	R-Value Studs	R-Value Cavity	Assembly U-Factor
Wall - Outside Winter Air Film[A]	0.17			0.17		
Siding - Vinyl[A]	0.62			0.62		
Continuous Insulation	0			0		
OSB - 7/16"[A]	0.62			0.62		
SPF Stud/Cavity Insulation	6.875	20		6.875	18	
1/2" Drywall [A]	0.45			0.45		
Inside Air Film[A]	0.68			0.68		
Studs at 16" o.c. [A]	25%	75%		20%	80%	
Total Wall R-Values	9.42	22.54		9.42	20.54	
Total Wall U-Factor	0.106	0.044	**0.060**	0.106	0.049	**0.060**
[A]2009 ASHRAE Handbook of Fundamentals						

Enermodal, 2001. Characterization of Framing Factors for Low-Rise Residential Building Envelopes (904-RP). Final Report prepared for ASHRAE.

Return to Residential

25. Mechanical Equipment Trade-Off

This amendment reinstates the performance option in IRC Chapter 11 to reduce prescriptive requirements by installing HVAC equipment with higher energy-efficiency performance ratings than required by the code. ***(Part of Amendment # 12)***

Revise as follows:

TABLEN1105.5.2 (1) (R405.5.2(1))
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Heating systems [d,e]	~~As proposed for other than electric heating without a heat pump, Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section R403 of the IECC-Commercial Provisions.~~ Fuel type: same as proposed design Efficiencies: - Electric: air-source heat pump with prevailing federal minimum standards -Nonelectric furnaces: natural gas furnace with prevailing federal minimum standards -Nonelectric boilers: natural gas boiler with prevailing federal minimum standards -Capacity: sized in accordance with Section R403.6	~~As proposed~~ As proposed As proposed As proposed As proposed
Cooling systems [d, f]	~~As proposed~~ -Fuel type: Electric -Efficiency: in accordance with prevailing federal minimum standards -Capacity: sized in accordance with Section N1103.6	~~As proposed~~ As proposed As proposed As proposed
Service Water Heating [d,e,f,g]	~~As proposed~~ -Fuel type: same as proposed design -Efficiency: in accordance with prevailing federal minimum standards -Use: gal/day = 30 + 10 × *Nbr* -Tank temperature: 120°F ~~-Use: same as proposed design~~	~~As proposed~~ As proposed As proposed Same as standard reference Same as standard reference ~~gal/day = 30 + (10 × *Nbr*)~~

Footnotes remain unchanged

Reason:

This amendment serves to retain energy-neutral equipment trade-off provisions from 2006 IRC Chapter 11 for heating systems, cooling systems, and service water heating. By retaining these, builders can optimize a code-compliant house design by using energy-efficient equipment. Quite often, the use of this high-efficiency equipment provides a more cost-effective solution to achieve code compliance. Eliminating this ability discourages the concept of the "house as a system" approach which is a cornerstone of building science.

Rejecting this amendment will create a disincentive to install state-of- the-art, energy-efficient equipment. It will increase the cost of construction by driving builders to often use less efficient equipment while increasing the cost of construction.

Significant improvements in the efficiency of HVAC and water heating equipment have been made in

the last 20 years. With the increased emphasis on new and improved technologies, this trend is expected to continue and will result in even higher energy savings in future years. If builders are forced to comply with the energy code by installing requirements which are not cost effective, there will be a resistance to install higher efficiency equipment. This could end up hurting energy efficiency in the long term: For instance, consumers in homes with non-condensing furnaces will be less likely to install a higher efficiency condensing replacement furnace because of the additional cost to run an exhaust vent.

Industries such as log home manufacturers may no longer be able to construct to projected higher envelope requirements. The combination of increases in envelope thermal requirements, building tightness and duct tightness combined with the elimination of energy-neutral trade-offs pose a serious threat to the viability of the log home industry. There are practical limitations to the thickness of log home walls, increases in log diameter have an exponential increase to the cost of logs, making log walls with a U-factor of 0.082 or lower prohibitively expensive.

Return to Residential

26. Window Area Trade-Off

This amendment provides the building designer the ability to reduce window area and get credit for the energy saved. ***(Part of Amendment # 12)***

Revise as follows:

TABLE N1105.5.2 (1) (R405.5.2(1))
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Glazing[a]	Total area[b] =	As proposed
	~~(a) The proposed glazing area; where proposed glazing area is less than 15% of the conditioned floor area.~~	
	~~(b)~~ 15% of the conditioned floor area~~; where the proposed glazing area is 15% or more of the conditioned floor area.~~	
	Orientation: equally distributed to four cardinal compass orientations (N, E, S, & W)	As proposed
	U-factor: from Table N1102.1.3	As proposed
	SHGC: From Table N1102.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used.	As proposed
	Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design)	0.92-(0.21 × SHGC as proposed)
	External shading: none	As proposed

Footnotes remain unchanged

Reason:

Walls generally have better thermal performance than windows. The code contains no incentive in the performance path for the building designer to optimize the window area to save energy and provide daylighting, egress and views that makes for a safe and comfortable house. These modifications provide the building designer the ability to reduce window area and get credit for the energy saved. As this section is currently written in the code, the house is penalized for having more than 15% window area yet receives no credit toward code compliance when the window area is reduced below 15%. This change rectifies this disparity and makes the performance path more representative of actual energy use.

Return to Residential

27. Exhaust Hood Makeup Air

This amendment reduces the amount of makeup air required for kitchen draft hoods in excess of 400 cfm and includes an exception that increases the threshold for requiring makeup air to draft hoods larger than 600 cfm.

Revise as follows:

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting ~~in excess of~~ more than 400 cubic feet per minute (0.19 m^3/s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate in excess of 400 cubic feet per minute. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.

Exception: Makeup air openings are not required for kitchen exhaust systems capable of exhausting not greater than 600 cubic feet per minute (0.28 m^3/s) provided that one of the following conditions is met:

1. Where the floor area within the air barrier of a dwelling unit is at least 1500 square feet, and where natural draft or mechanical draft space- or water-heating appliances are not located within the air barrier.
2. Where the floor area within the air barrier of a dwelling unit is at least 3000 square feet, and where natural draft space- or water-heating appliances are not located within the air barrier.
3. Where all appliances in the house are sealed combustion, power-vent, unvented, or electric.

Reason:

As originally written, this section allows range hoods up to 400 cfm to be installed without makeup air. This amendment aims for consistency by requiring makeup air equaling the amount above and beyond 400 cfm for larger fans. Essentially there would be no difference between the effect a 400 cfm fan has on a house and a 600 cfm fan with 200 cfm of makeup air. This would also improve the feasibility and acceptance of this code section as well as cut down on the amount of wasted energy and potential occupant discomfort caused by needlessly introducing excessive amounts of unconditioned air.

The exception takes into consideration that in many homes there is no danger of backdrafting due to the natural infiltration of outdoor air (which is relative to the size of the home) or the lack of natural draft appliances. The 400 cfm threshold can be raised to 600 cfm in these cases with no added danger.

Return to Residential

28. Joints, Seams, and Connections

This amendment eliminates the need to seal longitudinal seams in residential ductwork that operate at pressures below a 2 inch water column.

Revise as follows:

M1601.4.1 Joints, seams and connections. Longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC *Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. Joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic- plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass ductwork shall be *listed* and *labeled* in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape.

Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181 B-FX" for pressure-sensitive tape or "181 BM" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metallic ducts shall have a contact lap of not less than 1 inch (25 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets
equally spaced around the joint.

Closure systems used to seal all ductwork shall be installed in accordance with the manufacturers' instructions**.**

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.

2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.

3. ~~For ducts having a static pressure classification of less than 2 inches of water column (500Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams of other than the snap-lock and button-lock types.~~ Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

Reason:

The requirement to seal longitudinal duct joints and seams is fitting for commercial applications with static pressures of 2 inches water column and greater. However, this should not apply to residential applications which operate at a much lower pressure, closer to 0.2 inches water column.

One argument to seal all seams and joints is so the duct system functions efficiently. However, whether the longitudinal joints and seams are sealed or not on a low-pressure system has very little effect on system efficiency. To a much greater degree, system efficiency is affected by factors outside of the installer's influence. For example, the duct system can be perfectly balanced at the time of the inspection, but the occupants set furniture in front of registers, change the settings on the registers, open and close doors, etc.

Sealing the longitudinal joints and seams will not make a noticeable difference in either the efficiency or the energy saved, making the added time and cost unnecessary.

Return to Residential

2012 International Energy Conservation Code

E1. Comprehensive Amendment

This is a comprehensive amendment to provide flexibility for meeting energy code requirements while maintaining energy performance. It will provide a “true” unrestricted performance path to allow for cost-optimized construction of an energy-equivalent house. ***(Includes Amendments E6,14,15)***

E2. Remove Mandatory Requirements for Above Code Program

This proposal eliminates the need to meet all “Mandatory” requirements identified by the IRC/IECC as long as the program exceeds the energy-efficiency levels required.

E3. Overhang Credit for SHGC (Climate Zone 1-4)

This amendment allows for the use of overhangs to meet the solar heat gain coefficient requirements within the IECC.

E4. Multi-Family Air Leakage Testing

This amendment adds and exception to allow compliance to the air barrier requirements as and allow builders to test the entire building as a whole, as is permitted for commercial buildings.

E5. Air Leakage Rate Correction (Climate Zones 1-8)

This amendment modifies the requirements from 3 air changes per hour (ACH) to 5 ACH in Climate Zones 1-8

E6. Air Leakage Trade-Offs

This Amendment allows builders to trade improvements in other building energy components for less stringent building envelope pressure test results. This performance option provides flexibility in meeting the air tightness requirements and provides options for recovering from an unexpected air tightness test failure. ***(Part of Amendment E1)***

E7. Prescriptive Table Requirements

This amendment replaces 2012 IECC Tables R402.1.2 and R402.1.4 in the residential section of the 2012 with the following tables from the 2009 IECC.

E8. Basement Wall R-Value/U-Factors Reduction (Climate Zone 5)

This amendment reduces the basement wall insulation values requirements in Climate Zone 5, to a more reasonable R-Value/U-Factor based on values acceptable to both NAHB and DOE in the 2009 IRC.

E9. Ceiling R-Value/U-Factors Reduction (Climate Zones 2-5)

This amendment reinstates the appropriate minimum ceiling R-Values in climate zones 2, 3, 4 and 5, those published in the 2009 IRC CHAPTER 11.

E10. Correct SHGC for Climate Zone 4

This amendment changes the Climate Zone 4 SHGC back to N/R, because the addition of a prescriptive restriction for the SHGC of 0.40 is not a requirement that saves energy.

E11. Wall R-Value/U-Factors Corrections (Climate Zone 3 & 4)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zones 3 & 4 published in the 2009 IECC.

E12. Wall R-Value/U-Factors Corrections (Climate Zones 6-8)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zones 6, 7 & 8 published in the 2009 IRC Chapter 11.

E13.Trade-Off for 2X6 Wall

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies, which have reduced framing factors and R-18 insulation.

E14. Mechanical Equipment Trade-Off

This amendment reinstates the performance option in IRC Chapter 11 to reduce prescriptive requirements by installing HVAC equipment with higher energy-efficiency performance ratings than required by code. ***(Part of Amendment E1)***

E15. Window Area Trade-Off

This amendment provides the building designer the ability to reduce window area and get credit for the energy saved. ***(Part of Amendment E1)***

E16. Exhaust Hood Makeup Air

This amendment reduces the amount of makeup air required for kitchen draft hoods in excess of 400 cfm and includes an exception which increases the threshold for requiring makeup air to draft hoods larger than 600 cfm

E17. Joints, Seams, and Connections

This amendment eliminates the need to seal longitudinal seams in residential ductwork that operate at pressures below a 2 inch water column.

Back to Table of Contents

Return to IECC

E1. Comprehensive Amendment

This is a comprehensive amendment that provides flexibility for meeting the energy code requirements while maintaining energy performance. It provides a "true" unrestricted performance path that will allow for cost-optimized construction of an energy-equivalent house. (Includes Amendments E6, E7, 14, 15)

Revise as follows:

R402.4 Air leakage ~~(Mandatory)~~. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections N1102.4.1 through N1102.4.4.

R402.4.1 Building thermal envelope. The *building thermal envelope* shall comply with Sections N1102.4.1.1 and N1102.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

R402.4.1.1 Installation <u>(Mandatory)</u>. The components of the *building thermal envelope* as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the *code official*, an *approved* third party shall inspect all components and verify compliance.

R402.4.1.2 Testing <u>(Mandatory)</u>. The building or dwelling unit shall be tested ~~and verified as having an air leakage rate of not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8~~ <u>for air leakage</u>. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). 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*. 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, if installed at the time of the test, shall be open;
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
5. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
6. Supply and return registers, if installed at the time of the test, shall be fully open.

<u>R402.4.1.3 Leakage rate (Prescriptive).</u> <u>The building or dwelling unit shall have an air leakage rate not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8, when tested in accordance with Section N1102.4.1.2.</u>

TABLE R405.5.2(1)

SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Vertical fenestration other than opaque doors	Total area[b] = ~~(c) The proposed glazing area; where proposed glazing area is less than 15% of the conditioned floor area.~~ ~~(d)~~ 15% of the conditioned floor area~~; where the proposed glazing area is 15% or more of the conditioned floor area.~~ Orientation: equally distributed to four cardinal compass orientations (N, E, S, & W) U-factor: from Table R402.1.3 SHGC: From Table R402.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used. Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design) External shading: none	~~As proposed~~ As proposed As proposed As proposed 0.92-(0.21 × SHGC as proposed) As proposed
Heating Systems [d, e]	~~As proposed for other than electric heating without a heat pump, Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section C403 of the IECC-Commercial Provisions.~~ Fuel type: same as proposed design Efficiencies: Electric: air-source heat pump with prevailing federal minimum standards Nonelectric furnaces: natural gas furnace with prevailing federal minimum standards Nonelectric boilers: natural gas boiler with prevailing federal minimum standards Capacity: sized in accordance with Section N1103.7	~~As proposed~~ As proposed As proposed As proposed As proposed As proposed
Cooling Systems [d, f]	~~As proposed~~ Fuel type: Electric Efficiency: in accordance with prevailing federal minimum standards Capacity: sized in accordance with Section N1103.7	As proposed As proposed
Service Water Heating [d, e, f]	~~As proposed~~ Fuel type: same as proposed design Efficiency: in accordance with prevailing federal minimum standards Use: gal/day = 30 + 10 × *Nbr* Tank temperature: 120°F ~~Use: same as proposed design~~	~~As proposed~~ As proposed Same as standard reference Same as standard reference ~~gal/day = 30 + (10 × *Nbr*)~~

Footnotes remain unchanged

Reason:

This is a comprehensive amendment that provides flexibility for meeting the energy code requirements while maintaining energy performance. It provides a "true" unrestricted performance path that will allow for cost-optimized construction of an energy-equivalent house. The proposed changes provide alternatives that encourage innovation and the use of materials and equipment to result in a home

which is at least equivalent to that prescribed in the energy code.

The modifications will reinstate many of the changes made since the 2006 IRC Chapter 11 that restricted the flexibility of the builder/designer to construct an energy efficient code compliant home while still meeting the energy performance levels of the current code.

Items included in this amendment:

- *Energy-neutral building tightness tradeoffs*
- *Credit for more energy-efficient buildings which incorporate reduced window area*
- *Energy-neutral heating, cooling and water heating equipment efficiency tradeoffs*

Currently all homes have a "mandatory" requirement to be equal to or tighter than 3ACH50 or 5ACH50, depending on climate zone. Proposed changes will allow for homes to be less tight provided other efficiency changes are made to the house to offset energy lost due to the change in air infiltration.

Currently, when conducting a performance analysis, a building glazing area greater than 15% of the conditioned floor area (CFA) is penalized for using more energy. However, a building with less than 15% window to CFA does not get credit for saving energy. This amendment allows the builder/designer to optimize window area that is both energy efficient and pleasing to the consumer.

Return to IECC

E2. Remove Mandatory Requirements for Above Code Program

This proposal eliminates the need to meet all “Mandatory” requirements identified by the IRC/IECC as long as the program exceeds the energy-efficiency levels required.

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 in compliance with this code. ~~The requirements identified as “mandatory” in Chapter 4 shall be met.~~

Reason:

The key element of an above-code program is that it must meet or exceed the energy-efficiency requirements of the IECC. Requiring such a program to also meet the detailed prescriptive requirements labeled as “mandatory” in the IECC defeats the purpose of performance based above code program. This code change proposal will allow flexibility in the methodology used for any above-code program to meet or exceed IECC minimums.

Return to IECC

E3. Overhang Credit for SHGC (Climate Zone 1-4)

This amendment allows for the use of overhangs to meet the solar heat gain coefficient requirements within the IECC.

Add new text as follows:

PROJECTION FACTOR. The ratio of the horizontal depth of an overhang, eave, or permanently attached shading device, divided by the distance measured vertically from the bottom of the fenestration glazing to the underside of the overhang, eave, or permanently attached shading device.

R402.3.2.1 Glazed fenestration SHGC exception. In Climate Zones 1 through 4, permanently shaded vertical fenestration shall be permitted to satisfy the SHGC requirements. The projection factor of an overhang, eave, or permanently attached shading device shall be greater than or equal to the value listed in table 402.3.3 for the appropriate orientation. The minimum projection shall extend beyond each side of the glazing a minimum of 12 inches (0.3 m). Each orientation shall be rounded to the nearest cardinal orientation (+/-45 degrees or 0.79 rad) for purposes of calculations and demonstrating compliance.

TABLE R402.3.2.1
MINIMUM PROJECTION FACTOR REQUIRED BY ORIENTATION FOR SHGC EXCEPTION

ORIENTATION	PROJECTION FACTOR
North	>=0.40[a]
South	>=0.20
East	>=0.50
West	>=0.50

a. *For the north orientation, a vertical projection located on the west-edge of the fenestration with equivalent PF >= 0.15 shall also satisfy the minimum projection factor requirement.*

Reason:

The concept of using shading to reduce heat gain is integral to the architecture of some of the oldest cultures. Shading in modern construction offers many possibilities. This proposed code change allows for the use of overhangs to meet the solar heat gain coefficient requirements within the IECC. Permanent exterior shading features such as overhangs are allowed to be used in IECC Chapter 5 as a prescriptive tradeoff to meeting SHGC requirements. The calculation for determining the projection factor for overhangs has been in the 2000, 2003, 2006, and 2009 IECC for commercial buildings and has been proven to be very simple to calculate, fitting well into a prescriptive approach. The use of shading devices was allowed under the 2003 IECC and is currently allowed as a tradeoff under the commercial provisions of the IECC. Allowing flexibility in meeting the solar heat gain coefficient through the use of proven shading alternatives will increase the usability of the code for the building and design community while ensuring that the new fenestration is energy efficient. When credit for shading is permitted in the building code, it encourages an integrated approach to building designs, energy use, construction materials and renewable resources particularly as part of urban infrastructure, site and town planning and building design to be considered holistically. It also creates the opportunity for aesthetically pleasing and ingenious designs that might not otherwise be permitted.

Return to IECC

E4. Multi-Family Air Leakage Testing

This amendment adds an exception to allow compliance to the air barrier requirements as and allow builders to test the entire building as a whole, as is permitted for commercial buildings.

Revise as follows:

R402.4 Air leakage (Mandatory). The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Section R402.4.1 through R402.4.4.

Exception: Dwelling units of R-2 Occupancies and multiple single family dwellings shall be permitted to comply with IECC Section C402.5

Reason:

Air tightness testing for single-family detached homes is very straightforward; however, it is much more difficult to accurately test attached dwelling units, including multi-family buildings. Currently the IECC treats low-rise multifamily buildings of three stories or less like single-family homes and multifamily buildings of four stories or more like commercial buildings. Regardless of height, all multifamily buildings have the same air-tightness testing complications, such as: Does the entire building need to be tested at one time? What about multifamily buildings with open corridors? Does every dwelling need to be tested? Can the leakages be averaged between units? Is the leakage tested only to the "outside" or should it include leakage to adjacent units?

By approving this change, low-rise multifamily buildings and attached single-family dwellings will avoid these complications, but still held to the same level of performance as high-rise (R-2) residential as well as all commercial buildings.

Return to IECC

E5. Air Leakage Rate Correction (climate zones 1-8)

This amendment modifies the requirements from 3 Air Changes per Hour (ACH) to 5 ACH in climate zones 1 through 8.

Revise as follows:

R402.4.1.2 Testing. The building or dwelling unit shall be tested and verified as having an air leakage rate not exceeding five air changes per hour in Climate Zones 1 ~~and 2, and three air changes per hour in Climate Zones 3~~ through 8. Testing shall be conducted in accordance with ASTM E 779 or ASTM E 1827 and reported at a pressure of 0.2 inch w.g. (50 Pascals). 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*.

Table R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

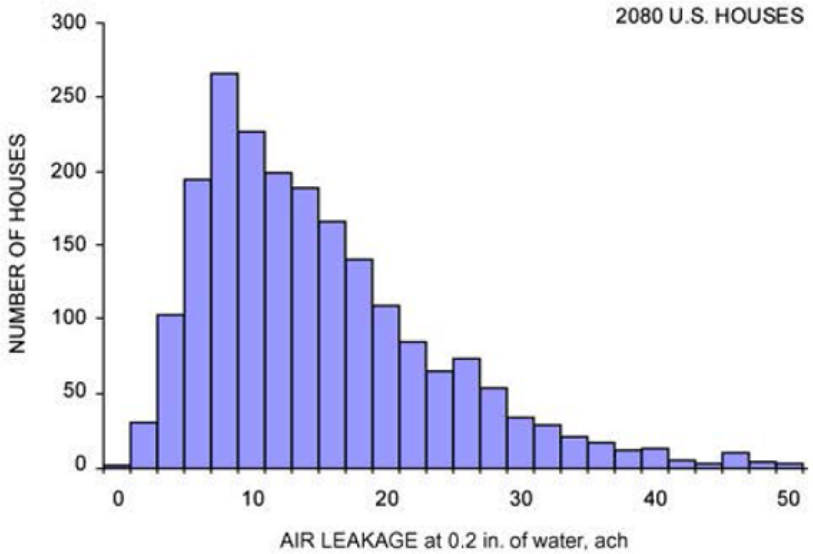
BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Air exchange rate	Air leakage rate of 5 air changes per hour in Climate Zones 1 ~~and 2, and 3 air changes per hour in Climate Zones 3~~ through 8 at a pressure of 0.2 inches w.g (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than 0.01 × *CFA* + 7.5 × (*Nbr* + 1) where: *CFA* = conditioned floor area *Nbr* = number of bedrooms Energy recovery shall not be assumed for mechanical ventilation.	For residences that are not tested, the same air leakage rate as the standard reference design. For tested residences, the measured air exchange rate[a]. The mechanical ventilation rated shall be in addition to the air leakage rate and shall be as proposed.

Footnotes remain unchanged

Reason:

Building tightness is an important part of an energy-efficient and comfortable house. However, 3 air changes (ACH) per hour at 50 Pascals is an extremely low target tightness, especially for smaller homes. The ASHRAE Handbook of Fundamentals shows that around 8% of U.S. homes achieve 3 ACH or less, 13% achieve 4 and less than 23% achieve 5. The proposed 5 ACH while still an aggressive tightness level will provide a tight, comfortable, energy-efficient home.

2013 ASHRAE Handbook—Fundamentals



E6. Air Leakage Trade-Offs

This Amendment allows builders to trade improvements in other building energy components for less stringent building envelope pressure test results. This performance option provides flexibility in meeting the air tightness requirements and provides options for recovering from an unexpected air tightness test failure. (Part of Amendment E1)

Revise as follows:

R402.4 Air leakage ~~(Mandatory)~~. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4.

R402.4.1 Building thermal envelope. The *building thermal envelope* shall comply with Sections R402.4.1.1 and R402.4.1.2. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

R402.4.1.1 Installation (Mandatory). The components of the *building thermal envelope* as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. Where required by the *code official*, an *approved* third party shall inspect all components and verify compliance.

R402.4.1.2 Testing (Mandatory). The building or dwelling unit shall be tested ~~and verified as having an air leakage rate of not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8~~ for air leakage. Testing shall be conducted with a blower door at a pressure of 0.2 inches w.g. (50 Pascals). 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*. During testing:

7. Exterior windows and doors, fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures;
8. Dampers including exhaust, intake, makeup air, backdraft and flue dampers shall be closed, but not sealed beyond intended infiltration control measures;
9. Interior doors, if installed at the time of the test, shall be open;
10. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed;
11. Heating and cooling systems, if installed at the time of the test, shall be turned off; and
12. Supply and return registers, if installed at the time of the test, shall be fully open.

R402.4.1.3 Leakage rate (Prescriptive). The building or dwelling unit shall have an air leakage rate not exceeding 5 air changes per hour in Climate Zones 1 and 2, and 3 air changes per hour in Climate Zones 3 through 8, when tested in accordance with Section R402.4.1.2.

Reason:

These modifications remove the mandatory maximum air-tightness requirement and provide designers and builders the flexibility to trade off building tightness with other performance path measures. Currently the building tightness requirement is mandatory and the 3 and 5 ACH tightness levels, even under ideal circumstances, are very difficult to achieve. This will provide energy neutral tradeoffs for expensive and sometimes unattainable requirements with other building improvements. This proposal does not change the stringency or efficiency of the code; it only increases the flexibility.

Return to IECC

E7. Prescriptive Table Requirements

This amendment replaces 2012 IECC Tables R402.1.2 and R402.1.4 in the residential section of the 2012 with the following tables from the 2009 IECC.

Delete Table 402.1.1 and Table 402.1.3 in their entirety and replace with the following:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION *U*-FACTOR[b]	SKYLIGHT[b] *U*-FACTOR	GLAZED FENESTRATION SHGC[b, e]	CEILING *R*-VALUE	WOOD FRAME WALL *R*-VALUE	MASS WALL *R*-VALUE[i]	FLOOR *R*-VALUE	BASEMENT[c] WALL *R*-VALUE	SLAB[d] *R*-VALUE & DEPTH	CRAWL SPACE[c] WALL *R*-VALUE
1	1.20	0.75	0.30	30	13	3 / 4	13	0	0	0
2	0.65[j]	0.75	0.30	30	13	4 / 6	13	0	0	0
3	0.50[j]	0.60	0.30	30	13	5 / 8	19	5/13[f]	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5 / 10	19	10/13	10, 2ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5[h]	13 / 17	30[g]	10/13	10, 2ft	10/13
6	0.35	0.60	NR	49	20 or 13+5[h]	15 / 19	30[g]	15/19	10, 4ft	10/13
7 and 8	0.35	0.60	NR	49	21	19 / 21	38[g]	15/19	10, 4ft	10/13

For SI: 1 foot = 304.8 mm.

a. R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 x 6 framing cavity such that the R-value is reduced by R-l or more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine Zone.

f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.

i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

j. For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1608.1.2 of the *International Building Code,* the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

TABLE 402.1.4
EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.75	0.75	0.035	0.082	0.165	0.064	0.360	0.477
3	0.65	0.65	0.035	0.082	0.141	0.047	0.360	0.136
4 except Marine	0.40	0.60	0.030	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	0.35	0.60	0.030	0.057	0.082	0.033	0.059	0.065
6	0.35	0.60	0.026	0.057	0.060	0.033	0.050	0.065
7 and 8	0.35	0.60	0.026	0.057	0.057	0.033	0.050	0.065

Footnotes remain unchanged

Nonfenestration Ufactors shall be obtained from measurement, calculation or an apprCNed source.

a. When more than half the insulation is on the interior, the mass wall Ufactors shall be a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.10 in Zone 4 except Marine, and the same as the frame wall Ufactor in Marine Zone 4 and Zones 5 through 8.
b. Basement wall Ufactor of 0.360 in warm-humid locations as defined by Figure 301.1 and Table 301.2.
c. Foundation Ufactor requirements shown in Table 402.1.3 include wall construction and interior air films but exclude soil conductivity and exterior air films. Ufactors for determining code compliance in accordance with Section 402.1.4 (total*VA* alternative) ofSection 405 (Simulated Performance Alternative) shall be modified to include soil conductivity and exterior air films.

Reason:

The increased table values in the 2012 IECC and the 2012 IECC did not show justification for the cost increases from the 2009 IECC. Studies indicate nationally almost a $6,000 increase to the cost of constructing a single-family detached dwelling with a 13-year simple payback. With statistics showing that for every $1,000 increase to the cost of construction nearly 206,000 potential home buyers will not qualify for a mortgage. This, increase disqualifies approximately 1.3 million families from purchasing a home every year. That equates to approximately $24,000,000 in potential taxes revenues never being generated for municipalities.

Return to IECC

E8. BASEMENT WALL R-Value/U-Factors Reduction (Climate Zone 5)

This amendment reduces the basement wall insulation value requirements in Climate Zone 5, to a more reasonable R-Value/U-Factor based on values acceptable to both NAHB and DOE in the 2009 IECC.

Revise as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	10/13 ~~15/19~~	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE R402.1.4 EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.059 ~~0.050~~	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

The prescriptive basement wall requirement increased from R-10 to R-15 in the 2012 IECC. Calculations used to justify the change were based on energy models with less sophisticated algorithms than Energy Plus, now DOE's preferred modeling software. When using Energy Plus, the energy savings in a 700-square-foot basement totaled $7 a year in Chicago (Climate Zone 5). The additional cost for this is conservatively estimated at $590. This makes the simple payback in excess of 58 years. The values being modified by this proposal are the same as those that DOE proposed in EC13 during the last code cycle. The values currently adopted were an increase from proposals not submitted by DOE.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
5	Chicago, IL	R-10->R-15	$7/yr	$590 ($0.82/ft2)	84 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481.

Return to IECC

E9. Ceiling R-Value/U-Factors Reduction (Climate Zones 2-5)

This amendment reinstates the appropriate minimum ceiling R-Values in climate zones 2, 3, 4 and 5, those published in the 2009 IRC Chapter 11.

Revise as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	~~38~~ 30	13	4/6	13	0	0	0
3	0.35	0.55	0.25	~~38~~ 30	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	~~49~~ 38	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	~~49~~ 38	20 or 13+5[h,i]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE R402.1.4 EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	~~0.030~~ 0.035	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	~~0.030~~ 0.035	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	~~0.026~~ 0.030	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	~~0.026~~ 0.030	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

There were four changes in the Ceiling R-value requirements in the 2012 IECC, none of which should have been considered cost effective. An energy and cost analysis was performed to show that the simple paybacks are in the 80-130 year range.

Climate Zone	Representative City	Change	Energy Savings	Incremental Cost	Simple Payback
2	Orlando, FL	R-38->R-30	$10/yr	$1,305	130 years
3	Atlanta, GA	R-38->R-30	$16/yr	$1,305	82 years
4	Richmond, VA	R-49->R-38	$15/yr	$1,379	92 years
5	Indianapolis, IN	R-49->R-38	$15/yr	$1,379	92 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481. Vaulted or cathedral ceiling are very problematic when trying to achieve R-49, which is about 16 inches thick. This would require a rafter at least 17" tall (which does not exist) or an insulated panel, which represents a very small portion of the market.

Return to IECC

E10. Correct SHGC for Climate Zone 4

This amendment changes the Climate Zone 4 SHGC back to N/R, since the addition of a prescriptive restriction for the SHGC of 0.40 is not a requirement that saves energy.

Revise as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	~~0.40~~ NR	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

Reason:

The addition of a prescriptive restriction for the SHGC of 0.40 was added in the 2012 IECC. This is not a requirement that saves energy. In Climate Zone 4, heating degree days outnumber cooling degree days by about 2 to 3 times. Therefore for most of the year, the "sun is your friend" and solar heat gain is beneficial and reduces heating loads. The majority of homes will not benefit from this restriction. The values being modified by this proposal are the same as what DOE proposed in itsEC13 during the 2009 code cycle. The values currently adopted were an increase from proposals not submitted by DOE.

Return to IECC

E11. Wall R-Value/U-Factors Corrections (Climate Zone 3 & 4)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zone 3 & 4 published in the 2009 IECC.

Revise as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	~~20 or 13+5[h,i]~~ 13[i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	~~20 or 13+5[h,i]~~ 13	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE R402.1.4 EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	~~0.060~~ 0.84	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	~~0.060~~ 0.84	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

All Footnotes remain unchanged

Reason:

Frame wall requirements in Climate Zone 3 changed from R-13 to R-20, which was, is not cost effective for the consumer.

Climate Zone	Representative City	Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
3	Atlanta, GA	R-13->R-20	$50/yr	$1,199	24 years
4	Richmond, VA	R-13->R-20	$59/yr	S1,199	20 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost

figures came from ASHRAE RP-1481. Not only is the payback is extremely long, but for a consumer, there would be a negative cash flow based on the incremental cost and energy savings. The increase in the monthly mortgage would be $6.43 (@ 5%) and the average monthly energy savings would be $4.17 in Zone 3 and $4.92 in Zone 4 causing the home owner to pay more in additional monthly mortgage payments than the energy savings returns.

The values being modified by this proposal are the same as what DOE proposed in its EC13 during the 2009 code cycle. The values currently adopted were an increase from proposals not submitted by DOE.

Return to IECC

E12. Wall R-Value/U-Factors Corrections (Climate Zones 6-8)

This amendment reinstates the appropriate minimum wall assembly R-Values/U-Factors in climate zones 6, 7 & 8 published in the 2009 IRC Chapter 11.

Revise as follows:

TABLE R402.1.2
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30[g]	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20 or 13+5h,i ~~20+5 or 13+10h,i~~	15/20	30[g]	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20 or 13+5h,i ~~20+5 or 13+10h,i~~	19/21	38[g]	15/19	10, 4 ft	15/19

Footnotes remain unchanged

TABLE R402.1.4 EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.35	0.55	0.026	0.060	0.098	0.047	0.059	0.065
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	~~0.048~~ 0.057	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	~~0.048~~ 0.057	0.057	0.028	0.050	0.055

Footnotes remain unchanged

Reason:

The prescriptive wall requirement increased to R-20+R5 in climate zones 6, 7 and 8 in the 2012 IECC. The additional cost for this is estimated at $1,819 for 1,016 square feet of wall. This makes the simple payback between 26 and 55 years depending on the climate zone. This also will create a negative cash flow for the consumer in all cases.

Climate Zone	Representative City	Basement Wall R-Value Change	Energy Savings	Incremental Cost	Simple Payback
6	Minneapolis, MN	R-20->R-20+5	$33/yr	$1,819 ($1.79/ft2)	55 years
7	Bemidgi, MN	R-20->R-20+5	$41/yr	$1,819 ($1.79/ft2)	44 years
8	Fairbanks, AK	R-20->R-20+5	$71/yr	$1,819 ($1.79/ft2)	26 years

The energy modeling was done using the Energy Plus simulation engine and BEopt version 1.4, Cost figures came from ASHRAE RP-1481.

Return to IECC

E13. Trade-Off for 2X6 Wall

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies, which have reduced framing factors and R-18 insulation.

Revise as follows:

SECTION R202 GENERAL DEFINITIONS (new)

Framing Factor. The fraction of the total building component area that is structural framing.

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR[b]	SKYLIGHT[b] U-FACTOR	GLAZED FENESTRATION SHGC[b,e]	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[i]	FLOOR R -VALUE	BASEMENT[c] WALL R -VALUE	SLAB[d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R - VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.35	0.55	0.25	38	20 or 13+5[h,i]	8/13	19	5/13f	0	5/13
4 except Marine	0.35	0.55	0.40	49	20 or 13+5[h,i]	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.32	0.55	NR	49	20 or 13+5[h,i]	13/17	30g	15/19	10, 2 ft	15/19
6	0.32	0.55	NR	49	20+5 or 13+10[h,i]	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.32	0.55	NR	49	20+5 or 13+10[h,i]	19/21	38[g]	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

a. *R*-values are minimums. *U*-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed *R*-value of the insulation shall not be less than the *R*-value specified in the table.
b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration. Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.
c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Climate Zones 1 through 3 for heated slabs.
e. There are no SHGC requirements in the Marine Zone.
f. Basement wall insulation is not required in warm-humid locations as defined by Figure R301.1 and Table R301.1.
g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
h. First value is cavity insulation, second is continuous insulation or insulated siding, so "13+5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40 percent or less of the exterior, continuous insulation *R*-value shall be permitted to be reduced by no more than R-3 in the locations where structural sheathing is used – to maintain a consistent total sheathing thickness.
i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.
j. R-18 insulation shall be permitted in place of the R-20 requirement provided the wall *framing factor* is 20% or less or exterior walls with 24" o.c. nominal vertical stud spacing.

Reason:

The ASHRAE Handbook of Fundamentals and ASHRAE Transaction 1995 Volume 101, Part 2 assumes that wood framed walls have a framing factor of 25%. This means that 25% of the wall area

consists of structural framing members and the remainder is a cavity suitable for installing insulation. When calculating the U-factor for a wall assembly, a high framing factor increases the overall assembly U-Factor. Reducing the framing factor also provides an increase in the thermal performance of the wall.

This amendment provides an option for a thermally equivalent tradeoff for 2x6 wall assemblies which have reduced framing factors and R-18 insulation. Here are the calculations showing equal U-Factors for both assemblies (0.060).

Wall Thermal Resistance by Component	2x6 Wall R-20 25%FF (16" o.c.)			2x6 Wall R-18 20% FF		
	R-Value Studs	R-Value Cavity	Assembly U-Factor	R-Value Studs	R-Value Cavity	Assembly U-Factor
Wall - Outside Winter Air Film[A]	0.17			0.17		
Siding - Vinyl[A]	0.62			0.62		
Continuous Insulation	0			0		
OSB - 7/16"[A]	0.62			0.62		
SPF Stud/Cavity Insulation	6.875	20		6.875	18	
1/2" Drywall [A]	0.45			0.45		
Inside Air Film[A]	0.68			0.68		
Studs at 16" o.c. [A]	25%	75%		20%	80%	
Total Wall R-Values	9.42	22.54		9.42	20.54	
Total Wall U-Factor	0.106	0.044	**0.060**	0.106	0.049	**0.060**
[A]2009 ASHRAE Handbook of Fundamentals						

Enermodal, 2001. Characterization of Framing Factors for Low-Rise Residential Building Envelopes (904-RP). Final Report prepared for ASHRAE.

Return to IECC

E14. Mechanical Equipment Trade-Off

This amendment reinstates the performance option in IRC Chapter 11 to reduce prescriptive requirements by installing HVAC equipment with higher energy-efficiency performance ratings than required by the code. (Part of Amendment E1)

Revise as follows:

TABLE R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Heating systems [d,e]	~~As proposed for other than electric heating without a heat pump, Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of Section R403 of the IECC-Commercial Provisions.~~ Fuel type: same as proposed design Efficiencies: Electric: air-source heat pump with prevailing federal minimum standards Nonelectric furnaces: natural gas furnace with prevailing federal minimum standards Nonelectric boilers: natural gas boiler with prevailing federal minimum standards Capacity: sized in accordance with Section R403.6	~~As proposed~~ As proposed As proposed As proposed As proposed
Cooling systems [d,e]	~~As proposed~~ Fuel type: Electric Efficiency: in accordance with prevailing federal minimum standards Capacity: sized in accordance with Section R403,6	As proposed As proposed
Service Water Heating [d,e,f,g]	~~As proposed~~ Fuel type: same as proposed design Efficiency: in accordance with prevailing federal minimum standards Use: gal/day = 30 + 10 × *Nbr* Tank temperature: 120°F ~~Use: same as proposed design~~	~~As proposed~~ As proposed Same as standard reference Same as standard reference ~~gal/day = 30 + (10 × *Nbr*)~~

Footnotes remain unchanged

Reason:

This amendment serves to retain energy-neutral equipment trade-off provisions from the 2006 IECC for heating and cooling systems and service water heating. By retaining these, builders have an opportunity to optimize a code-compliant house design by using energy-efficient equipment. Quite often, the use of this high-efficiency equipment provides a more cost-effective solution to achieve code compliance. Eliminating this ability discourages the concept of the "house as a system" approach, which is a cornerstone of building science.

Rejecting this amendment will reduce any incentive to install state-of- the-art, energy-efficient equipment. It will increase the cost of construction by driving builders to often use less efficient equipment.

Significant improvements in the efficiency of HVAC and water heating equipment have been made in the last 20 years. With the increased emphasis on new and improved technologies, this trend is expected to continue and will result in even higher energy savings in future years. If builders are forced to comply with the energy code by installing requirements which are not cost-effective, there will be a resistance to install higher efficiency equipment. This could end up hurting energy efficiency in the long term, consumers which have non-condensing furnaces will be less likely to install a higher efficiency condensing replacement furnace because of the additional cost to run an exhaust vent.

Industries such as log home manufacturers may no longer be able to construct to projected higher envelope requirements. The combination of increases in envelope thermal requirements, building tightness and duct tightness combined with the elimination of energy neutral trade-offs pose a serious threat to the viability of the log home industry. There are practical limitations to the thickness of log home walls. Increasing requirements for the log diameter has a exponential increase in the cost of the logs, making log walls with a U- factor of 0.082 or lower prohibitively expensive

Return to IECC

E15. Window Area Trade-Off

This amendment will provide the building designer the ability to reduce window area and get credit for the energy saved. (Part of Amendment E1)

Revise as follows:

TABLE R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Vertical fenestration other than opaque doors	Total area[b] = ~~(a) The proposed glazing area; where proposed glazing area is less than 15% of the conditioned floor area.~~ ~~(b)~~ 15% of the conditioned floor area~~; where the proposed glazing area is 15% or more of the conditioned floor area.~~	As proposed
	Orientation: equally distributed to four cardinal compass orientations (N, E, S, & W)	As proposed
	U-factor: from Table R402.1.3	As proposed
	SHGC: From Table R402.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used.	As proposed
	Interior shade fraction: 0.92-(0.21 × SHGC for the standard reference design)	0.92-(0.21 × SHGC as proposed)
	External shading: none	As proposed

Footnotes remain unchanged

Reason:

Walls generally have better thermal performance than windows. There is no incentive in the performance path for the building designer to optimize the window area to save energy and provide daylighting, egress and views that makes for a safe and comfortable house. These modifications will provide the building designer the ability to reduce window area and get credit for the energy saved. As this section is now written, the house is penalized for having more than 15% window area yet receives no credit toward code compliance when the window area is reduced below 15%. This change rectifies this disparity and makes the performance path more representative of actual energy use.

Return to IECC

E16. Exhaust Hood Makeup Air

This amendment reduces the amount of makeup air required for kitchen draft hoods in excess of 400 cfm and includes an exception that increases the threshold for requiring makeup air to draft hoods larger than 600 cfm.

Revise as follows:

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting ~~in excess of~~ more than 400 cubic feet per minute (0.19 m^3/s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate in excess of 400 cubic feet per minute. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.

Exception: Makeup air openings are not required for kitchen exhaust systems capable of exhausting not greater than 600 cubic feet per minute (0.28 m^3/s) provided that one of the following conditions is met:

1. Where the floor area within the air barrier of a dwelling unit is at least 1500 square feet, and where natural draft or mechanical draft space- or water-heating appliances are not located within the air barrier.
2. Where the floor area within the air barrier of a dwelling unit is at least 3000 square feet, and where natural draft space- or water-heating appliances are not located within the air barrier.
3. Where all appliances in the house are sealed combustion, power-vent, unvented, or electric.

Reason:

As originally written, this section allows range hoods up to 400 cfm to be installed without makeup air. This amendment aims for consistency by requiring makeup air equaling the amount above and beyond 400 cfm for larger fans. Essentially there would be no difference between the effect a 400 cfm fan has on a house and a 600 cfm fan with 200 cfm of makeup air. This would also improve the feasibility and acceptance of this code section as well as cut down on the amount of wasted energy and potential occupant discomfort caused by needlessly introducing excessive amounts of unconditioned air.

The exception takes into consideration that in many homes there is no danger of backdrafting due to the natural infiltration of outdoor air (which is relative to the size of the home) or the lack of natural draft appliances. The 400 cfm threshold can be raised to 600 cfm in these cases with no added danger.

Return to IECC

E17. Joints, Seams, and Connections

This amendment eliminates the need to seal longitudinal seams in residential ductwork that operate at pressures below a 2 inch water column.

Revise as follows:

M1601.4.1 Joints, seams and connections. Longitudinal and transverse joints, seams and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC *Duct Construction Standards—Metal and Flexible* and NAIMA *Fibrous Glass Duct Construction Standards*. Joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic- plus-embedded-fabric systems, liquid sealants or tapes. Tapes and mastics used to seal fibrous glass ductwork shall be *listed* and *labeled* in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic or "181 A-H" for heat-sensitive tape.

Tapes and mastics used to seal metallic and flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181 B-FX" for pressure-sensitive tape or "181 BM" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked 181B-C. Crimp joints for round metallic ducts shall have a contact lap of not less than 1 inch (25 mm) and shall be mechanically fastened by means of not less than three sheet-metal screws or rivets
equally spaced around the joint.

Closure systems used to seal all ductwork shall be installed in accordance with the manufacturers' instructions.

Exceptions:

1. Spray polyurethane foam shall be permitted to be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. ~~For ducts having a static pressure classification of less than 2 inches of water column (500Pa), additional closure systems shall not be required for continuously welded joints and seams and locking-type joints and seams of other than the snap-lock and button-lock types~~. Continuously welded and locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

Reason:

The requirement to seal longitudinal duct joints and seams is fitting for commercial applications with static pressures of 2 inches water column and greater. However, this should not apply to residential applications which operate at a much lower pressure, closer to 0.2 inches water column.

One argument to seal all seams and joints is so the duct system functions efficiently. However, whether the longitudinal joints and seams are sealed or not on a low-pressure system has very little effect on system efficiency. To a much greater degree, system efficiency is affected by factors outside of the installer's influence. For example, the duct system can be perfectly balanced at the time of the inspection, but the occupants set furniture in front of registers, change the settings on the registers, open and close doors, etc.

Sealing the longitudinal joints and seams will not make a noticeable difference in either the efficiency or the energy saved, making the added time and cost unnecessary.

Return to IECC

2015 International Building Code

B1. Canopies and Marquees

This amendment removes the requirement to design a multifamily building canopy with a flat or low-slope top surface using the higher live load associated with a marquee where such canopies cannot be accessed from a window or door above the canopy.

Back to Table of Contents

B1. Canopies and Marquees

This amendment removes the requirement to design a multifamily building canopy with a flat or low-slope top surface using the higher live load associated with a marquee where such canopies cannot be accessed from a window or door above the canopy.

Revise as follows:

MARQUEE. A canopy that is supported entirely by a building, is constructed of noncombustible materials, and has a top surface which is sloped less than 25 degrees from the horizontal ~~and is located less than 10 feet (3.05 m) from operable openings above or adjacent to the level of the marquee~~.

TABLE 1607.1
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (lbs.)
21. Marquees~~, except one- and two-family dwellings~~	75	—
25. Residential		
One- and two-family dwellings		
Uninhabitable attics without storage[i]	10	
Uninhabitable attics with storage [i, j, k]	20	
Habitable attics and sleeping areas[k]	30	
Canopies~~, including marquees~~	20	
All other areas	40	
Hotels and multifamily dwellings		
Private rooms and corridors serving them	40	
Public rooms[m] and corridors serving them	100	
26. Roofs		
All roof surfaces subject to maintenance workers		300
Awnings and canopies:		
Fabric construction supported by a skeleton structure	5 Nonreducible	
All other construction, except one- and two-family dwellings and occupiable canopies	20	
Ordinary flat, pitched, and curved roofs (that are not occupiable)	20	
Where primary roof members are exposed to a work floor, at single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs:		
Over manufacturing, storage warehouses, and repair garages		2,000
All other primary roof members		300
Occupiable roofs:		
Roof gardens	100	
Assembly areas	100[m]	
Canopies	75[n]	
All other similar areas	Note l	Note l

n. An occupiable canopy is a canopy that has a top surface which is sloped less than 25 degrees from the horizontal and is located less than 10 feet (3.05 m) from operable openings above or adjacent to the level of the canopy.

Reason:

This amendment revises the 2012 IBC language regarding canopies and marquees. Language approved initially for the 2012 IBC substantially changed the design requirements for many small porch and patio roofs or canopies on residential buildings, particularly those located nowhere near public streets. Prior to the 2012 IBC, these roofs were designed for standard roof live loads or local

ground snow loads (typically in the range of 20 or 30 pounds per square foot). These elements are now required to be designed for 75psf if they happen to be less than 10 feet vertically from a window above or horizontally from a window at the level of the canopy. This represents a substantial increase in design requirements for apartment or condominium complexes with these elements, as well as a substantial issue for renovations. An NAHB proposal amended the 2012 IBC to restore the traditional 20 psf roof live load requirement for porches, patios, or canopies on one- and two-family dwellings, but the issue remains for multifamily buildings.

This amendment makes two key changes. First, it revises the definition of a marquee to reflect the specific construction requirements provided in Section 3106.5. This fixes a conflict that was introduced when the longstanding definition of a "marquee" (an element generally associated with theaters) was amended to include elements that had previously been considered "canopies." Second, it adds a line item under "occupiable roofs" for canopies and establishes a 75psf live load requirement for a canopy that could be considered an "occupiable roof." As described in the new Footnote n, this would be a canopy with a flat or low-slope top surface which can be accessed from an operable window or other opening that is less than 10 feet above the top surface of the canopy or within 10 feet of either end of the canopy. These changes preserve the intent of what the National Council of Structural Engineering Associations' (NCSEA) Code Advisory Committee was trying to achieve – requiring a higher live load for a canopy that could be used as a means of egress or otherwise accessed by building occupants – without applying the term "marquee" to an element that most code users, not to mention the average person on the street, would call a "canopy". These changes would also remove the 75psf requirement from flat or low-slope canopies on multifamily buildings as long as they are not accessible as noted above.

Return to IBC

2015 International Fire Code

F1. Correlation of the International Fire Code with the International Residential Code

The purpose of this code change is to address some of the controversy that has risen since the passage of F3-07/08. The original purpose was to clear up the vagueness between the interaction between the IRC and the IFC and how they apply to one- and two- family dwellings and townhouses

F2. Fire Apparatus Access Roads

The purpose of this amendment is to retain the current means in which the fire apparatus access road dimensions are measured, and to include the shoulders of the road

Back to Table of Contents

F1. Scoping of the International Fire Code

The purpose of this code change is to address some of the controversy that has risen since the passage of F3-07/08. The original purpose was to clear up the vagueness between the interaction between the IRC and the IFC and how they apply to one- and two- family dwellings and townhouse

Revise as follows:

[A] 102.5 Application of residential code. Where structures are designed and constructed in accordance with the *International Residential Code*, the provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. ~~shall apply as follows:~~

~~1. Construction and design provisions: Provisions of this code pertaining to the exterior of the structure shall apply including, but not limited to, premises identification, fire apparatus access and water supplies. Where interior or exterior systems or devices are installed, construction permits required by Section 105.7 of this code shall also apply.~~

~~2. Administrative, operational and maintenance provisions: All such provisions of this code shall apply.~~

Reason:

The purpose of this code change is to address some of the controversy that has risen since the passage of F3-07/08. The original purpose was to clear up the vagueness between the interaction between the IRC and the IFC and how they apply to one- and two- family dwellings and townhouses. Unfortunately the committee did not approve the proposal which clearly stated that the IFC does not regulate the construction and design features of the structure built in accordance with the International Residential Code, but it does regulate the fire protections features leading up to the structure (such as premise identification, fire protection water supplies and fire apparatus access). Instead of clearing up where the IFC ends and the IRC begins, the current language has created more controversy over who has the authority over the construction and design of one- and two- family dwellings and townhouses.

One of the problems with the current language is found in the last sentence of the first application, regarding the construction permits required by section 105.7. All of the required construction permits that would apply to these types of structures, as indicated in this section, are already addressed in the International Residential Code. There is no need for duplicative requirements within the I-Codes that would require a builder or homeowner to go out and get two permits from two different departments for the same work. In addition, after conducting an internet search it was discovered that a majority of states prohibit the IFC from applying to one- and two- family dwellings.

Another problem with the current language is the reference to all administrative, operational and maintenance requirements of the IFC that previously were not enforced, but due to the language that was approved, all of the provisions in the administrative chapters should be being applied right now. Looking over some of the operational permit requirements of 105.6

and the maintenance requirements for fire alarm systems and carbon monoxide detectors it raises the questions, has the fire service been enforcing these provisions and if so how. In many states, once a one- and two family dwelling or townhouse receives its certificate of occupancy there is no more involvement with the building official. The IFC states that it is the fire official's responsibility to insure existing building meet the requirements of this code and that all buildings are maintained in accordance with its provisions. How does the fire service enforce this code on homeowners regarding flammable liquids storage? Or smoke alarms? How many departments have requested entry to ensure that every existing one- and two-family dwelling is equipped with a carbon monoxide detector as required by the 2012 IFC. The manner in which the IFC is currently written, leaves the fire service open to liability if they are not enforcing the provisions of this code as they are written and adopted.

Return to IFC

F2. Scoping of the International Fire Code

The purpose of this amendment is to retain the current means in which the fire apparatus access road dimensions are measured, and to include the shoulders of the road

Revise as follows:

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 20 feet (6096 mm), ~~exclusive of shoulders,~~ except for approved security gates in accordance with Section 503.6, and an unobstructed vertical clearance of not less than 13 feet 6 inches (4115 mm).

D103.1 Access road width with a hydrant. Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), ~~exclusive of shoulders~~. See Figure D103.1.

D105.2 Width. Fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm), ~~exclusive of shoulders~~, in the immediate vicinity of any building or portion of building more than 30 feet (9144 mm) in height.

Reason:

The purpose of this amendment is to retain the current means in which the fire apparatus access road dimensions are measured, and to include the shoulders of the road. Without this modification, builders will be required to take additional steps that will not only increase the overall dimensions of the road surfaces, but more than likely will lead to misinterpretation from jurisdiction to jurisdiction as to which part of the road is defined as the shoulder.

According to the Federal Highway Administration shoulders are provided for the strict use of emergency vehicles responding to an emergency and are to remain clear. These shoulders are often called "fire lanes". Currently there is no definition for the term "shoulder" within the International Fire Code (IFC) or any other code written by the International Code Council (ICC). Is it the areas to the right of the white line? What if there is no white line present? The lack a uniform definition for all fire officials, developers, and planning departments will lead to conflicting opinions of what constitutes a shoulder. There is great concern over the ramifications that this proposal will have on all newly constructed fire apparatus access roads, as well as those that are pre-existing.

The IFC clearly states the fire apparatus road must be designed and built to support the imposed loads and be surfaced in a way to provide all weather driving capability. If the shoulder (or area beyond the white line) is paved using any of the many acceptable materials, there is no reason that it should not be included in the measured width of the fire apparatus access road. In many rural parts of the United States, these shoulders are permitted to be paved using gravel and in some of the more remote areas are regular dirt roads.

In addition, Section 503.1 of the 2009 International Fire Code states that any building or structure built or moved into to the jurisdiction, hereafter, would be required to have a fire apparatus access road provided. This would surely have a financial impact on any jurisdiction trying to annex or increase their territory. It is possible that jurisdictions would be required to reconstruct or build additional roadways to serve existing structures that currently do not have roadways that conform to this code change

2012 International Fuel Gas Code

FG1. Room Large In Comparison With Size Of The Appliance

In the 2009 IFGC the words “water heater” were added to this definition although the sections where the term is used do not address water heaters.

FG2. Piping through foundation wall

This is an installation method that has been used for decades. No data was ever presented that would show a safety problem or inadequacy when a proper installation and sealing of the opening was installed in accordance with the IFGC.

FG3. Pipe Support Material

This change from the 2006 International Fuel Gas Code (IFGC) is clearly proprietary in nature. To disallow any other material that is proven to meet the requirements for support is contrary to the spirit of the ICC family of codes (I-Codes)

Back to Table of Contents

IFGC 1. Room Large In Comparison With Size Of The Appliance

In the 2009 IFGC the words “water heater” were added to this definition although the sections where the term is used do not address water heaters.

Revise as follows:

ROOM LARGE IN COMPARISON WITH SIZE OF THE APPLIANCE. Rooms having a volume equal to at least 12 times the total volume of a furnace, ~~water heater~~ or air-conditioning appliance and at least 16 times the total volume of a boiler. Total volume of the appliance is determined from exterior dimensions and is to include fan compartments and burner vestibules, when used. When the actual ceiling height of a room is greater than 8 feet (2438 mm), the volume of the room is figured on the basis of a ceiling height of 8 feet (2438 mm).

Reason:

In the 2009 IFGC the words “water heater” were added to this definition although the sections where the term is used do not address water heaters. Sections 308.3 and 308.4 pertain to air conditioners, furnaces, and boilers only. Therefore, the addition of water heaters to the definition only causes confusion.

There already exist requirements in the IFGC to cover the issue of volume of space for fuel fired appliances. Specifically, Section 304.5 covers indoor combustion air, relating to the required volume of the room. The change to this definition does not take into consideration compensation for the use of outside air, nor does it defer to manufactures installation instructions. By adding “Water Heater” to the definition, the size of the room will increase to 12 times the volume of the water heater in order to utilize the reduction of clearances listed in Table 308.2. This change in the sizing of rooms for water heaters is inconsistent with conventional building practices. Sizing principles and methods for providing adequate combustion air, and clearances for appliances in closets and other rooms already exist within the IFGC. Also by the definition requiring oversized rooms for water heaters, goes directly against the instructions of many manufacturers. Requiring spaces that are current code requirements for providing combustion air and clearances are unsafe or otherwise unacceptable. Manufacturer’s instructions and Section 304.5 adequately cover the installation without requiring a random volume ratio.

Return to IFGC

IFCG 2. Piping Through Foundation Wall

The purpose of this amendment is to retain the current means in which the fire apparatus access road dimensions are measured, and to include the shoulders of the road

Delete the portion of the code and replace as shown below:

~~**404.4 Underground penetrations prohibited.** Gas piping shall not penetrate building foundation walls at any point below grade. Gas piping shall enter and exit a building at a point above grade and the annular space between the pipe and the wall shall be sealed.~~

404.4 Piping through foundation wall. Underground piping, where installed below grade through the outer foundation or basement wall of a building, shall be encased in a protective pipe sleeve or shall be protected by an approved device or method. The annular space between the gas piping and the sleeve and between the sleeve and the wall shall be sealed.

Reason:

The conventional installation practice of allowing piping to go through foundation walls below grade should not be prohibited. This is an installation method that has been used for decades. No data was ever presented that would show a safety problem or inadequacy when a proper installation and sealing of the opening was installed in accordance with the IFGC.

Requiring above grade entry points into the foundation will require extra piping and joints, both inside and outside, exposing the piping system to physical damage and increased risk of leakage on the outside of buildings as well as within the building. This increase in outside exposure will be particularly significant in a city or at congested commercial locations where piping must come above grade at times through sidewalks at the front or rear of the building or come through the ground in public ways before turning to enter the foundation or building. This will also present practical issues of locating the exterior and interior piping system to have entry points that are compatible with the building design, i.e., doorways, loading docks, accessible entry systems (ramps) etc. There will also be additional costs in these circumstances when the underground piping must be relocated to miss one of the items mentioned above.

This amendment will coordinate the IFGC provisions with all other industry fuel gas codes.

Return to IFGC

IFCG 3. Pipe Support Material

This change from the 2006 International Fuel Gas Code (IFGC) is clearly proprietary in nature. To disallow any other material that is proven to meet the requirements for support is contrary to the spirit of the ICC family of codes (I-Codes).

Revise as follows:

407.2. Design and Installation. *Piping* shall be supported with ~~metal~~ pipe hooks, metal pipe straps, ~~metal~~ bands, ~~metal~~ brackets, ~~metal~~ hangers, or building structural components, suitable for the size of *piping*, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected appliances and shall not be supported by other *piping*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section 415. Supports, hangers, and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. All parts of the supporting equipment shall be designed and installed so they will not be disengaged by movement of the supported *piping*.

Reason:

This change from the 2006 International Fuel Gas Code (IFGC) is clearly proprietary in nature. To disallow any other material that is proven to meet the requirements for support is contrary to the spirit of the ICC family of codes (I-Codes). Section 105.2 specifically states that the code should be inclusive in nature as long as products and materials meet the qualities necessary to meet their intended purpose. Favoring one material over another without reason is unacceptable. The change to the 2009 IFGC is too restrictive and eliminates other support materials that have been used successfully for years.

The 2012 change will have a significant impact on several manufacturers that have established alternate materials for piping supports. If the structural properties of a material is tested and proven to meet the structural specifications for supporting the piping it should be accepted for use. If the material requirements for this section are not removed, it basically allows this code to become exclusionary. In the past the I-Codes have railed from the exclusivity of other codes that limit the type of materials. Other materials have proven themselves acceptable over the years and should not be eliminated to prosper one type of material.

Return to IFGC

2012 International Mechanical Code

M1. Domestic Kitchen Exhaust Makeup Air

The exhaust rate of 400 cubic feet per minute (cfm) was chosen arbitrarily and without substantiation other than it being greater than the minimum exhaust rate of range hoods on the market.

Back to Table of Contents

IMC 1. Domestic Kitchen Exhaust Makeup Air

The exhaust rate of 400 cubic feet per minute (cfm) was chosen arbitrarily and without substantiation other than it being greater than the minimum exhaust rate of range hoods on the market.

Revise as follows:

505.2 Makeup air required. Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m^3/s) shall be provided with makeup air at a rate approximately equal to the difference between the exhaust air rate and 400 cubic feet per minute. Such makeup air systems shall be equipped with a means of closure ~~and shall be automatically controlled to start and operate simultaneously with the exhaust system~~.

> **Exception:** Where all appliances in the house are of sealed combustion, power-vent, unvented, or electric, the exhaust hood system shall be permitted to exhaust up to 600 cubic feet per minute (0.28 m^3/s) without providing makeup air. Exhaust hood systems capable of exhausting in excess of 600 cubic feet per minute (0.28 m^3/s) shall be provided with a makeup air at a rate approximately equal to the difference between the exhaust air rate and 600 cubic feet per minute.

Reason:

This section, new in the 2009 International Residential Code (IRC) and 2009 International Mechanical Code (IMC), attempts to solve an unproven backdrafting problem with range hoods. The exhaust rate of 400 cubic feet per minute (cfm) was chosen arbitrarily and without substantiation other than it being greater than the minimum exhaust rate of range hoods on the market. However, several manufacturers do not produce any range hoods below the 400 cfm threshold, effectively reducing a homeowner's choice of kitchen exhaust options without the added difficulty and expense of installing makeup air.

The reasoning that kitchen exhaust systems are available with an exhaust rate under 400 cfm does not take down-draft systems, popular with homeowners, into consideration. Most of them operate at 500 to 600 cfm and therefore require makeup air.

As written, this section allows range hoods up to 400 cfm to be installed without makeup air. It would be consistent to require makeup air equaling the amount above and beyond 400 cfm for larger fans. Essentially, there would be no difference between the effect a 400 cfm fan has on a house and a 600 cfm fan with 200 cfm of makeup air. This would also improve the feasibility and acceptance of this code section as well as cut down on the amount of wasted energy in heating or cooling the makeup air.

This section requires an automatic means of closure for the makeup air opening beyond what the code has historically required for residential construction. For example, Section G2407.6 requires no dampers whatsoever for combustion air openings to the outdoors, such as found in many homes in the northern US. The amended section would allow barometric dampers.

Finally, the current code section does not take into effect the fact that in many homes there

is no danger of backdrafting, due to the lack of natural draft appliances. The 400 cfm threshold could be raised to 600 cfm in those cases with no added danger. This would allow for down-draft fans without dedicated makeup air.

Return to IMC

2012 International Plumbing Code

P1. Developed Length of Hot Water Piping

This section, as written, would require placement of water heaters to areas of a home that are not efficient for utility location, the installation of circulation systems, as well as increase the insulation requirements to meet the IECC.

Back to Table of Contents

IPC 1. Developed Length of Hot Water Piping

The exhaust rate of 400 cubic feet per minute (cfm) was chosen arbitrarily and without substantiation other than it being greater than the minimum exhaust rate of range hoods on the market.

Revise as follows:

607.2 Hot water supply temperature maintenance. Where the *developed length* of hot water piping from the source of hot water supply to the farthest fixture exceeds 50 feet (15 240mm), the hot water supply system shall be provided with a method of maintaining the temperature in accordance with the *International Energy Conservation Code*.

Exception: Where the *developed length* of hot water piping from the source of hot water supply to the farthest fixture is 50 to 100 feet (15 240 to 30 480mm), the piping from the source of hot water supply to all fixtures exceeding 50 feet (15 240mm) in *developed length* shall be insulated to a minimum of R-4.

Reason:

There is no supporting data for the given distance of 50 feet. Why not 40 or 60? 100 feet is a benchmark for when additional systems are needed. This section, as written, would require placement of water heaters to areas of a home that are not efficient for utility location, the installation of circulation systems, as well as increase the insulation requirements to meet the IECC.

The amendment adds an exception allowing greater flexibility while still reducing energy and water consumption. It brings back the long-standing distance of 100 feet with the addition of pipe insulation. The insulation value in the amendment is taken from the National Green Building Standard (ICC 700-2008).

2012 International Existing Building Code

EB1. Compliance with Federal Fair Housing Law

These sections, new to the 2012 edition of the IEBC, should be stricken as they far exceed the Federal Fair Housing Act (FHAct) requirements for accessibility

EB2.Scoping of the International Existing Building Code

This amendment removes language that would apply the provisions of the International Existing Building Code on one- and two-family dwellings that are constructed using the IRC.

Back to Table of Contents

EB1: Compliance with Federal Fair Housing Law

These sections, new to the 2012 edition of the IEBC, should be stricken as they far exceed the Federal Fair Housing Act (FHAct) requirements for accessibi*lity*

Revise as follows:

705.1 General. A *facility* that is altered shall comply with the applicable provisions in Sections 705.1.1 through 705.1.14, and Chapter 11 of the *International Building Code* unless it is *technically infeasible*. Where compliance with this section is *technically infeasible*, the alteration shall provide access to the maximum extent that is technically feasible.

A *facility* that is constructed or altered to be accessible shall be maintained accessible during occupancy.

Exceptions:

1. The altered element or space is not required to be on an accessible route unless required by Section 705.2.
2. Accessible means of egress required by Chapter 10 of the *International Building Code* are not required to be provided in existing *facilities*.
3. Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in existing *facilities* ~~undergoing less than a Level III *alteration*~~.
4. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provisions for Type B dwelling units.

705.2 Alterations affecting an area containing a primary function. Where an *alteration* affects the accessibility to a, or contains an area of, *primary function*, the route to the *primary function* area shall be accessible. The accessible route to the *primary function* area shall include toilet facilities or drinking fountains serving the area of *primary function*.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of *primary function*.
2. This provision does not apply to *alterations* limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to *alterations* limited solely to mechanical systems, electrical systems, installation or *alteration* of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to *alterations* undertaken for the primary purpose of increasing the accessibility of a *facility*.
5. ~~This provision does not apply to altered areas limited to Type B dwelling and sleeping units.~~

1012.8 Accessibility. *Existing buildings* that undergo a change of group or occupancy classification shall comply with this section.

Exception: Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in existing buildings and facilities undergoing a *change of occupancy* ~~in conjunction with less than a Level III alteration~~.

1012.8.2 Complete change of occupancy. Where an entire building undergoes a *change of occupancy*, it shall comply with Section 1012.8.1 and shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to *primary function* areas.
3. Signage complying with Section 1110 of the *International Building Code*.
4. Accessible parking, where parking is provided.

5. At least one accessible passenger loading zone, where loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

~~**Exception:** The accessible features listed in Items 1 through 6 are not required for an accessible route to Type B units.~~

Reason:

These sections, new to the 2012 edition of the IEBC, should be stricken as they far exceed the Federal Fair Housing Act (FHAct) requirements for accessibility. Of most importance is that this change requiring compliance with IBC "Type B Units" in an alteration or change of use of an existing building is contrary to Federal law. First, these requirements expand the Federal law that only "multifamily buildings" constructed for first occupancy after March 13, 1991 need to be constructed to the FHAct requirements. Second, these requirements would apply to ALL existing buildings converted to multifamily use, no matter when they were first constructed. But, Federal law does not require existing buildings to comply with the FHAct. This is mainly due to the design and construction of the components of older buildings such as door and hallway widths, and the location of structural elements that that cannot be changed without great expense. This added expense can deter inner-city revitalization efforts of converting older existing buildings into residential occupancies.

Another problem is that this HUD supported change seems to be an attempt to circumvent and nullify the FHAct and the rulings handed down by the Federal Courts. The FHAct Rules includes a two-year statute of limitations on bringing suit and making corrections to an existing non-compliant multifamily building, a statute of limitations upheld by the Federal Circuit Courts of Appeals. It also appears this change is an attempt by a department of the federal government to mandate a change to the federal regulations without going through the Federal Administrative Procedure Act rulemaking process.

There is also the aspect of Federal preemption. The inclusion of these requirements in the IEBC is contrary to Federal Law. As Federal Law will preempt any state or local law, there will be challenges to the adoption of this Code. There is no benefit for any state or local jurisdiction to have to fight a challenge in court if the adoption of the IEBC contains these requirements. Until such time as the U.S. Congress passes Federal law, and HUD goes through the rule making process and develops such accessibility requirements for inclusion in the FHAct design manual, these requirements should not be included in the adoption of the IEBC.

Return to IEBC

EB2.Scoping of the International Existing Building Code

This amendment removes language that would apply the provisions of the International Existing Building Code on one- and two-family dwellings that are constructed using the IRC.

Revise as follows:

IEBC [A] 101.2 Scope. The provisions of the *International Existing Building Code* shall apply to the *repair, alteration, change of occupancy, addition* and relocation of *existing buildings*.

Exception: Detached one- and two-family *dwellings* and multiple single-family *dwellings (townhouses)* not more than three *stories* above *grade plane* in height with a separate *means of egress* and their accessory structures are not required to comply with the International Existing Building Code.

Reason:

Now that Chapter 34 has been removed from the 2012 IBC, the following exception needs to be added to the International Existing Building Code. The IEBC was not meant to apply to one- and two-family dwellings and townhouses, yet there was some confusion at the code hearings as to whether the IEBC would apply to structures built under the IRC. When you look at the IRC's scoping, it is clear that the IRC shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory. By clearly stating in the IEBC that one and two family dwellings and townhouses are exempt from the provisions of this code, there will be less chance of confusion when code officials begin using the IEBC.

Return to IEBC