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The new code, get the facts

presented by

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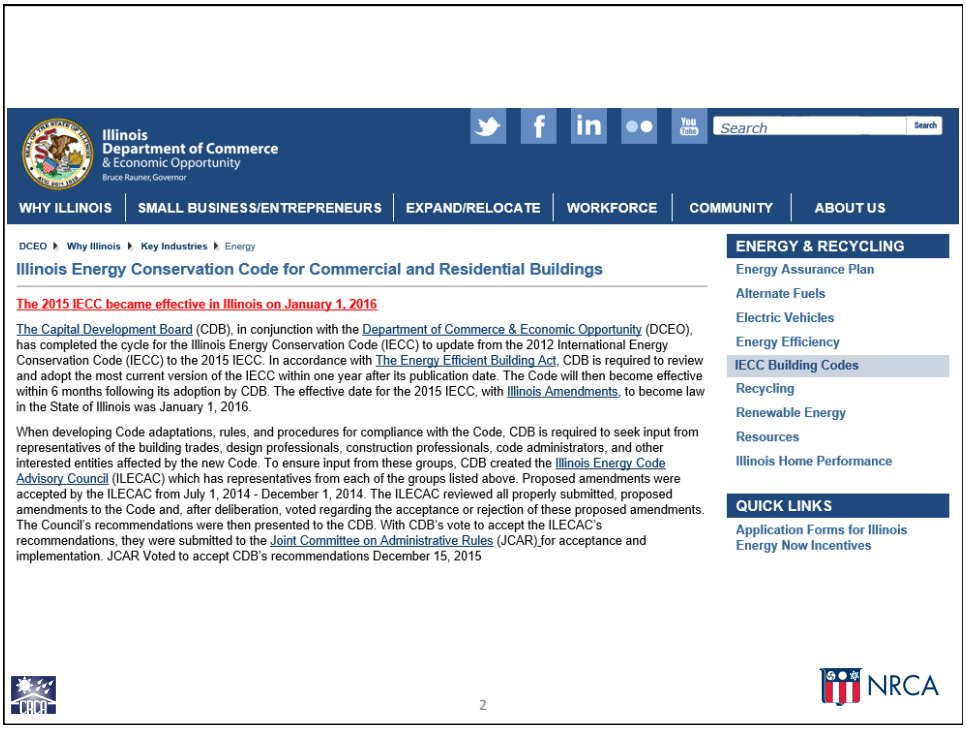

Public Act 096-0778 was signed into law on August 28, 2009 amending the Energy Efficient Commercial Building Act by including residential buildings and amending the name of the act to the Energy Efficient Building Act. The new requirements for residential buildings became effective on January 29, 2010.

HISTORY OF THE ILLINOIS ENERGY CONSERVATION CODE

Public Act 093-0936 (*Energy Efficient Commercial Building Act*) was signed into law in August, 2004. Thereby, an Illinois Energy Conservation Code for Commercial Buildings based on the 2000 International Energy Conservation Code (IECC), the American Society of Heating, Refrigeration and Air-conditioning Engineers (ASHRAE) 90.1-1999 Standard referenced therein, and the 2001 IECC Supplement to that Code, became effective April 8, 2006. On October 9, 2007 the Law was revised to mandate the latest published edition, excluding supplements, of the IECC. As of August 18, 2009 the Illinois Energy Conservation Code for Commercial Buildings was the 2009 IECC. On August 28, 2009, Public Act 096-0778 requiring an energy code for residential buildings was signed into law. It became effective January 29, 2010, establishing the 2009 IECC as the first energy code for residential buildings in Illinois.

Senate Bill 3724, signed by the Governor on August 17, 2012, amended the implementation date of the 2012 Illinois Energy Conservation Code to January 1, 2013. The Bill also lengthened the time the ILECAC and CDB have to review and adopt future published editions of the Code and make them effective. This allowed stakeholders more time for training and preparation to build, design, and enforce the future updated codes.

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WHAT THE LAW REQUIRES

The Law requires all new commercial and residential construction for which a building permit application is received by a municipality or county to follow a comprehensive statewide energy conservation code. Renovations, alterations, additions, and repairs to most existing commercial and residential buildings must follow the Illinois Energy Conservation Code. The Law requires design and construction professionals to follow the latest published edition of the International Energy Conservation Code (IECC) which is currently the 2015 IECC and the ASHRAE Standard 90.1-2013 "Energy Standard for Buildings except Low-Rise Residential Buildings," referenced therein. Under the law, the Capital Development Board has the power to modify the Illinois Energy Conservation Code. The Illinois Office of Energy & Recycling in the Department of Commerce and Economic Opportunity is responsible for providing Training, Education and Technical Assistance in support.

Local governments are free to adopt stricter energy conservation Laws for COMMERCIAL BUILDINGS defined by the Law. However, for RESIDENTIAL BUILDINGS defined by the Law, local governments may not adopt or regulate energy conservation standards either less or more stringent than the Illinois Energy Conservation Code. Exceptions which would allow local governments to regulate energy efficient standards in a more stringent manner are municipalities or counties which meet one of the following three provisions:

- A unit of local government that on or before May 15, 2009 adopted or incorporated by reference energy efficient building standards for residential building that are equivalent to or more stringent than the 2006 International Energy Conservation Code
- A unit of local government that on or before May 15, 2009 provided to the Capital Development Board identification of an energy efficient building code or amendment that is equivalent to or more stringent than the 2006 International Energy Conservation Code
- A municipality with a population of 1,000,000 or more

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WHAT THE LAW DOESN'T COVER

The Law does not apply to buildings designated "historic" or having "landmark status" (interior and exterior separately), buildings exempt from a local building code, and buildings that do not use either electricity or fossil fuel for comfort conditioning. For purposes of determining whether this exemption applies, a building will be presumed to be heated by electricity, even in the absence of equipment used for electric comfort heating, whenever the building is provided with electrical service in excess of 100 amps. The Illinois' Energy Efficient Building Act may be found in Chapter 20 of the Illinois Compiled Statutes, Act 3125

TRAINING OPPORTUNITIES – PROGRAM YEAR 2014-15

The Illinois Energy Office's schedule for another training series directed at the Illinois construction industry is now available. Homebuilders, general contractors, architects, engineers, code officials, HVAC specialists, realtors, and home performance professionals will be able to learn about the newest energy conservation codes for new construction, additions and renovation projects in Illinois. Sessions will be offered to Illinois Investor Owned Utility customers at no cost. Course offerings as follows:

New classes will be listed when they become available

Energy Code Interpretations of the 2015 Energy Conservation Code - Email your question for technical interpretations of the 2015 *International Energy Conservation Code*® (IECC®), with amendments, as it applies to the State of Illinois.

Frequently Asked Questions (FAQ's) concerning the 2012 International Energy Conservation Code® (IECC®), with amendments, as it applies to the State of Illinois

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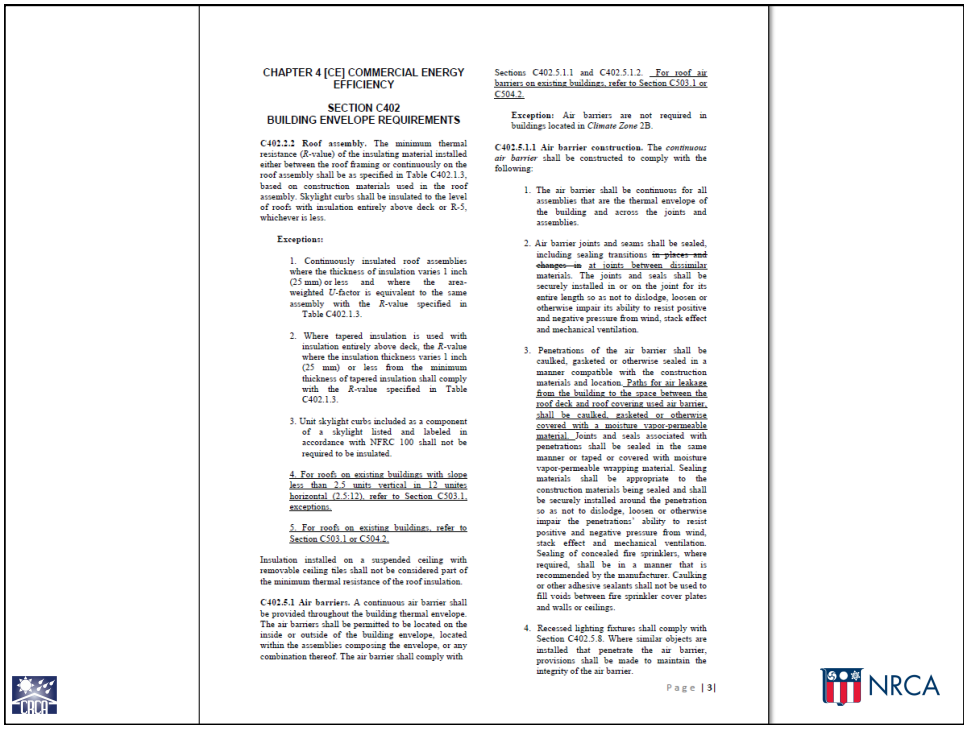

CHAPTER 4 [CE] COMMERCIAL ENERGY EFFICIENCY

SECTION C402
BUILDING ENVELOPE REQUIREMENTS

C402.2.2 Roof assembly. The minimum thermal resistance (*R*-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table C402.1.3, based on construction materials used in the roof assembly. Skylight curbs shall be insulated to the level of roofs with insulation entirely above deck or R-5, whichever is less.

Exceptions:

1. Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25 mm) or less and where the area-weighted *U*-factor is equivalent to the same assembly with the *R*-value specified in Table C402.1.3.
2. Where tapered insulation is used with insulation entirely above deck, the *R*-value where the insulation thickness varies 1 inch (25 mm) or less from the minimum thickness of tapered insulation shall comply with the *R*-value specified in Table C402.1.3.
3. Unit skylight curbs included as a component of a skylight listed and labeled in accordance with NFRC 100 shall not be required to be insulated.
4. For roofs on existing buildings with slope less than 2.5 units vertical in 12 units horizontal (2.5:12), refer to Section C503.1, exceptions.
5. For roofs on existing buildings, refer to Section C503.1 or C504.2.

Insulation installed on a suspended ceiling with removable ceiling tiles shall not be considered part of the minimum thermal resistance of the roof insulation.

C402.5.1 Air barriers. A continuous air barrier shall be provided throughout the building thermal envelope. The air barriers shall be permitted to be located on the inside or outside of the building envelope, located within the assemblies composing the envelope, or any combination thereof. The air barrier shall comply with Sections C402.5.1.1 and C402.5.1.2. For roof air barriers on existing buildings, refer to Section C503.1 or C504.2.

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

C402.5.1.1 Air barrier construction. The *continuous air barrier* shall be constructed to comply with the following:

1. The air barrier shall be continuous for all assemblies that are the thermal envelope of the building and across the joints and assemblies.
2. Air barrier joints and seams shall be sealed, including sealing transitions ~~in places and changes in~~ at joints between dissimilar materials. The joints and seals shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation.
3. Penetrations of the air barrier shall be caulked, gasketed or otherwise sealed in a manner compatible with the construction materials and location. Paths for air leakage from the building to the space between the roof deck and roof covering used air barrier, shall be caulked, gasketed or otherwise covered with a moisture vapor-permeable material. Joints and seals associated with penetrations shall be sealed in the same manner or taped or covered with moisture vapor-permeable wrapping material. Sealing materials shall be appropriate to the construction materials being sealed and shall be securely installed around the penetration so as not to dislodge, loosen or otherwise impair the penetrations' ability to resist positive and negative pressure from wind, stack effect and mechanical ventilation. Sealing of concealed fire sprinklers, where required, shall be in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.
4. Recessed lighting fixtures shall comply with Section C402.5.8. Where similar objects are installed that penetrate the air barrier, provisions shall be made to maintain the integrity of the air barrier.

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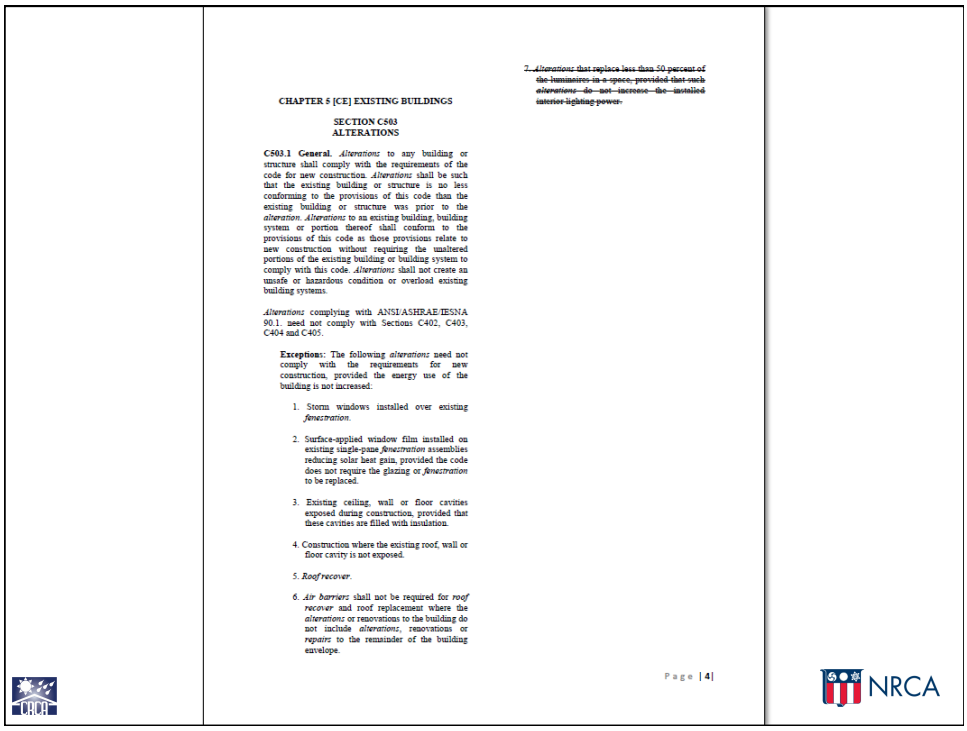

CHAPTER 5 [CE] EXISTING BUILDINGS

SECTION C503
ALTERATIONS

C503.1 General. *Alterations* to any building or structure shall comply with the requirements of the code for new construction. *Alterations* shall be such that the existing building or structure is no less conforming to the provisions of this code than the existing building or structure was prior to the *alteration*. *Alterations* to an existing building, building system or portion thereof shall conform to the provisions of this code as those provisions relate to new construction without requiring the unaltered portions of the existing building or building system to comply with this code. *Alterations* shall not create an unsafe or hazardous condition or overload existing building systems.

Alterations complying with ANSI/ASHRAE/IESNA 90.1 need not comply with Sections C402, C403, C404 and C405.

Exceptions: The following *alterations* need not comply with the requirements for new construction, provided the energy use of the building is not increased:

1. Storm windows installed over existing *fenestration*.
2. Surface-applied window film installed on existing single-pane *fenestration* assemblies reducing solar heat gain, provided the code does not require the glazing or *fenestration* to be replaced.
3. Existing ceiling, wall or floor cavities exposed during construction, provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall or floor cavity is not exposed.
5. *Roof recover*.
6. *Air barriers* shall not be required for *roof recover* and roof replacement where the *alterations* or renovations to the building do not include *alterations*, renovations or *repairs* to the remainder of the building envelope.
7. ~~*Alterations* that replace less than 50 percent of the luminaires in a space, provided that such *alterations* do not increase the installed interior lighting power.~~

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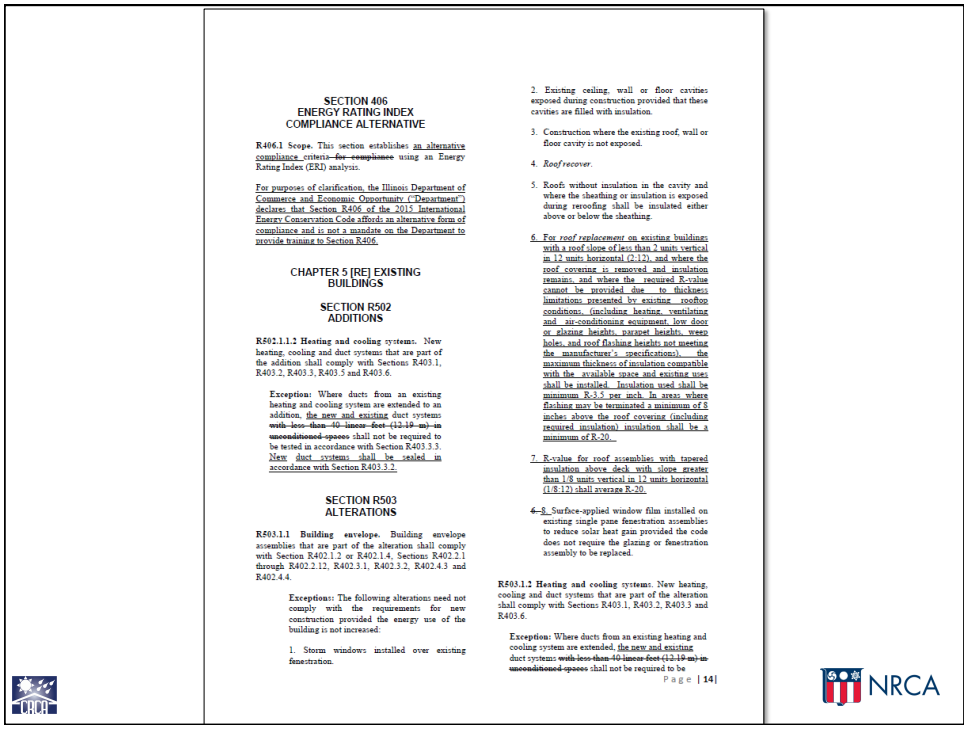

SECTION 406
ENERGY RATING INDEX
COMPLIANCE ALTERNATIVE

R406.1 Scope. This section establishes an alternative compliance criteria ~~for compliance~~ using an Energy Rating Index (ERI) analysis.

For purposes of clarification, the Illinois Department of Commerce and Economic Opportunity ("Department") declares that Section R406 of the 2015 International Energy Conservation Code affords an alternative form of compliance and is not a mandate on the Department to provide training to Section R406.

CHAPTER 5 [RE] EXISTING BUILDINGS

SECTION R502
ADDITIONS

R502.1.1.2 Heating and cooling systems. New heating, cooling and duct systems that are part of the addition shall comply with Sections R403.1, R403.2, R403.3, R403.5 and R403.6.

Exception: Where ducts from an existing heating and cooling system are extended to an addition, the new and existing duct systems ~~with less than 40 linear feet (12.19 m) in unconditioned spaces~~ shall not be required to be tested in accordance with Section R403.3.3. New duct systems shall be sealed in accordance with Section R403.3.2.

SECTION R503
ALTERATIONS

R503.1.1 Building envelope. Building envelope assemblies that are part of the alteration shall comply with Section R402.1.2 or R402.1.4, Sections R402.2.1 through R402.2.12, R402.3.1, R402.3.2, R402.4.3 and R402.4.4.

Exceptions: The following alterations need not comply with the requirements for new construction provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
3. Construction where the existing roof, wall or floor cavity is not exposed.
4. *Roof recover*.
5. Roofs without insulation in the cavity and where the sheathing or insulation is exposed during reroofing shall be insulated either above or below the sheathing.
6. For *roof replacement* on existing buildings with a roof slope of less than 2 units vertical in 12 units horizontal (2:12), and where the roof covering is removed and insulation remains, and where the required R-value cannot be provided due to thickness limitations presented by existing rooftop conditions, (including heating, ventilating and air-conditioning equipment, low door or glazing heights, parapet heights, weep holes, and roof flashing heights not meeting the manufacturer's specifications), the maximum thickness of insulation compatible with the available space and existing uses shall be installed. Insulation used shall be minimum R-3.5 per inch. In areas where flashing may be terminated a minimum of 8 inches above the roof covering (including required insulation) insulation shall be a minimum of R-20.
7. R-value for roof assemblies with tapered insulation above deck with slope greater than 1/8 units vertical in 12 units horizontal (1/8:12) shall average R-20.
8. Surface-applied window film installed on existing single pane fenestration assemblies to reduce solar heat gain provided the code does not require the glazing or fenestration assembly to be replaced.

R503.1.2 Heating and cooling systems. New heating, cooling and duct systems that are part of the alteration shall comply with Sections R403.1, R403.2, R403.3 and R403.6.

Exception: Where ducts from an existing heating and cooling system are extended, the new and existing duct systems ~~with less than 40 linear feet (12.19 m) in unconditioned spaces~~ shall not be required to be

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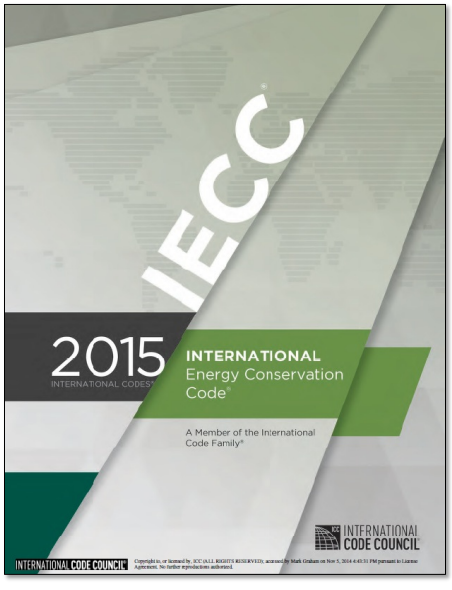
tested in accordance with Section R403.3.3. Altered duct system shall be sealed in accordance with Section R403.3.2.

SECTION R504
REPAIRS

R504.2 Application. For the purposes of this code, the following shall be considered repairs:

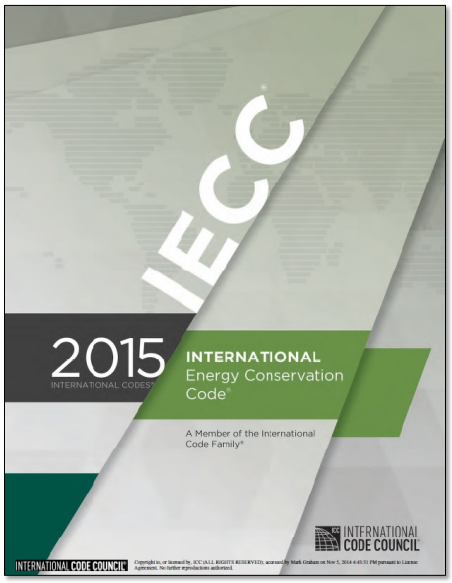
1. Glass-only replacements in an existing sash and frame.
2. Roof repairs.
3. Insulation with new roof covering for roof slopes less than 2 units vertical in 12 units horizontal (2:12) inches only in areas where the tapered insulation is used above an existing roof covering to create slope between drains or up-slope from obstructions to water flow.
3. 4. Repairs where only the bulb and/or ballast within the existing luminaires in a space are replaced provided that the replacement does not increase the installed interior lighting power.

Sections M1507.2 (R403.6.2), M1507.3 (R403.6.3), M1507.3.1 (R403.6.4), M1507.3.2 (R403.6.5), M1507.3.3 (R403.6.6), M1507.4 (R403.6.7)
Tables M1507.3.3(1) (R403.6.6(1)), M1507.3.3(2) (R403.6.6(2)), M1507.4 (R403.6.7)



Roof requirements:

- R-value
- Roof reflectivity
- Air retarder



IECC 2015:

Commercial buildings:

- All except "Residential Buildings"

Residential buildings:

- One- and two-family dwellings, multiple single-family dwellings and Group R-2, R-3 and R-4 buildings three stories or less

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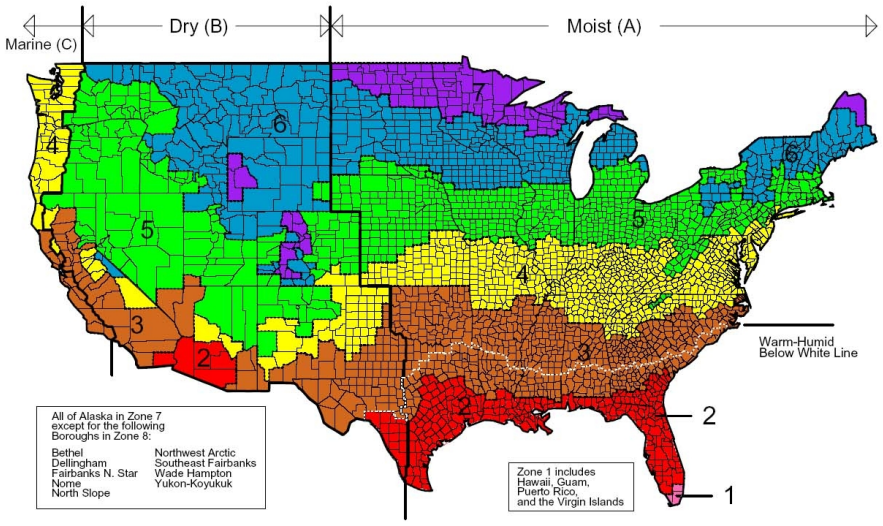
IECC 2015, Fig. C301.1-Climate zones

Fig. R301.1 (residential climate zones) is similar



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Minimum R-value

IECC 2015: Commercial Buildings (Insulation component R-value-based method)

Climate zone	Assembly description		
	Insulation entirely above deck	**Metal buildings**	**Attic and other**
1	R-20ci (all other) R-25ci (Group R)	R-19 + R-11 LS	R-38
2	R-25ci		
3			
4	R-30ci		R-38 (except Marine 4)
5			R-38 (all other) R-49 (Group R, Marine 4)
6		R-25 + R-11 LS	R-49
7	R-35ci	R-30 + R-11 LS	
8			

ci = Continuous insulation; LS = Liner system

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Comparison of IECC's various editions

Commercial Buildings (Insulation component R-value-based method)

Climate Zone	IECC 2006	IECC 2009	IECC 2012*	IECC 2015*
1	R-15 ci	R-15 ci	R-20 ci	R-20 ci
2		R-20ci		R-25 ci
3				
4			R-25 ci	R-30 ci
5	R-20 ci			
6				
7	R-25 ci	R-25 ci	R-30 ci	R-35 ci
8				

* Applies to roof replacement projects
ci = continuous insulation

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Reflectivity

International Energy Conservation Code, 2015 Edition (Commercial)

C402.3 Roof solar reflectance and thermal emittance. Low-sloped roofs directly above cooled conditioned spaces in Climate Zones 1, 2 and 3 shall comply with one or more of the options in Table C402.3.

Exceptions: [Refer to earlier "Cool and Green Roofs" presentation]

TABLE C402.3
MINIMUM ROOF REFLECTANCE AND EMITTNCE OPTIONS

Three-year solar reflectance of 0.55 and 3-year aged thermal emittance of 0.75
Three-year-aged solar reflectance index of 64

[Footnotes omitted for clarity]

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Air barrier

International Energy Conservation Code, 2015 Edition (Commercial), Sec. C402.5

"A continuous building envelope air barrier shall be provided throughout the building envelope…." (Except 2B)

Test methods:

- Whole building: Not greater than 0.40 cfm/ft^3
- Assembly: Not greater than 0.04 cfm/ft^3
- Material: Not greater than 0.004 cfm/ft^3
  - Deemed to comply: BUR, MB, adhered single ply and SPF

Air barrier not required in reroofing projects unless also recladding (IECC 2015 only: Sec. C502.4)

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Code compliance is becoming increasingly challenging and presents significant liability risks

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