



DEPARTMENT OF COMMUNITY DEVELOPMENT

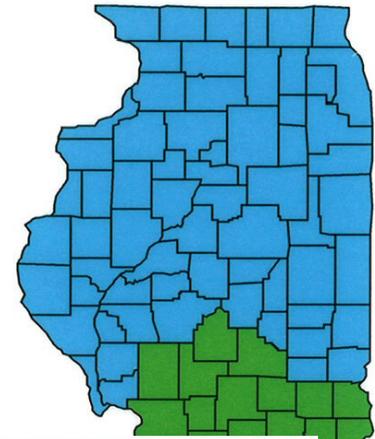
Kristal Deininger - Administrator

HELPFUL BUILDING GUIDELINES

2012 IECC Requirements

The 2012 International Energy Conservation Code

The 2012 IECC was developed by the International Code Council (ICC) and is currently available to states for adoption. The IECC is the national model standard for energy-efficient residential construction recognized by federal law. Users of this guide are strongly recommended to obtain a copy of the IECC and refer to it for any questions and further details on compliance. To obtain a copy of the 2012 IECC, contact the ICC or visit www.iccsafe.org. IECC compliance training is also available from many sources.



Step-by-Step Instructions

- Using the climate zone map to the right, match the jurisdiction to the appropriate IECC climate zone. Use the simplified table of IECC building envelope requirements (below) to determine the basic thermal envelope requirements associated with the jurisdiction.
- Use the "Outline of 2012 IECC Requirements" printed on the back of this sheet as a reference or a categorized index to the IECC requirements. Construct the building according to the requirements of the IECC and other applicable code requirements.

CLIMATE ZONE 5				
Adams	De Witt	Jo Daviess	McDonough	Sangamon
Boone	Douglas	Kane	McHenry	Schuyler
Brown	DuPage	Kankakee	McLean	Scott
Bureau	Edgar	Kendall	Menard	Stark
Calhoun	Ford	Knox	Mercer	Stephenson
Carroll	Fulton	La Salle	Morgan	Tazewell
Cass	Greene	Lake	Moultrie	Vermilion
Champaign	Grundy	Lee	Ogle	Warren
Clark	Hancock	Livingston	Peoria	Whiteside
Coles	Henderson	Logan	Piatt	Will
Cook	Henry	Macon	Pike	Winnebago
Cumberland	Iroquois	Marshall	Putnam	Woodford
DeKalb	Jersey	Mason	Rock Island	

Limitations

This guide is an energy code compliance aid for Illinois based upon the simple prescriptive option of the 2012 IECC. It does not provide a guarantee for meeting the IECC. This guide is not designed to reflect the actual energy code, with amendments, if any, adopted in Illinois and does not, therefore, provide a guarantee for meeting the state energy code. For details on the energy code adopted by Illinois, including how it may differ from the IECC, please contact your local building code official. Additional copies of this guide are available on www.reca-codes.com.

	Windows			Insulation				Foundation		
	Fenestration U-Factor	Skylight U-Factor	Glazed Fenestration SHGC	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value	Floor R-Value	Basement Wall R-Value	Slab R-Value and Depth	Crawl Space Wall R-Value
Zone 5	0.32	0.55	NR	49	20 or 13 + 5	13/17	30	15/19	10, 2 ft	15/19

TITLE 71: PUBLIC BUILDINGS, FACILITIES, AND REAL PROPERTY
 CHAPTER I: CAPITAL DEVELOPMENT BOARD
 SUBCHAPTER d: ENERGY CODES
 PART 600 ILLINOIS ENERGY CONSERVATION CODE
 SECTION 600.420 LOCAL JURISDICTION

- Construction projects involving residential buildings and for which a municipality or county requires a building permit must comply with the Illinois Energy Conservation Code if the project involves new construction, addition, alteration, renovation or repair. In the case of any addition, alteration, renovation or repair to an existing commercial structure, the Code as described by this Subpart D applies only to the portions of that structure that are being added, altered, renovated or repaired. [20 ILCS 3125/20(a)]
- The local authority having jurisdiction (AHJ) shall establish its own procedures for enforcement of the Illinois Energy Conservation Code.
- No unit of local government, including any home rule unit, may regulate energy efficient building standards for residential buildings in a manner that is either less or more stringent than the standards established pursuant to this Subpart D.

DISCLAIMER: This handout has been created by Tazewell County Community Development to assist with code compliance under the 2012 International Residential Code and is not intended to cover all circumstances. For further questions please check with the Department.

Outline of 2012 IECC Requirements for Illinois Homes

The simplified table of building envelope requirements (on the previous page) applies to new residential buildings, as defined in the IECC, with wood framing and/or mass walls. For steel-framed buildings, the same window requirements apply; however, refer to IECC section R402.2.6 for specific ceiling, wall and floor insulation R-value requirements. The table also applies to all additions, alterations and replacement windows. The table is based upon the thermal envelope requirements in the 2012 IECC's prescriptive compliance option for the appropriate climate zones (Table R402.1.1) and does not reflect any state-specific amendments to the IECC.

Fenestration (IECC Sections R303.1.3, R402.3, R402.5)

- Fenestration (including all windows and doors) and Skylight U-factors are maximum acceptable levels. The Glazed Fenestration SHGC maximums apply to all windows, skylights and glazed doors (except certain skylights). An area-weighted average of fenestration products is permitted to satisfy these requirements.
- Window, door and skylight U-factors and SHGCs must be determined from a National Fenestration Rating Council (NFRC) rating that is independently certified and set forth on a label on the product or from a limited table of product default values in the IECC. See www.nfrc.org for more details on the NFRC rating system.
- Windows, skylights, and sliding glass doors must also be labeled in a manner to show that they meet the IECC's air infiltration requirements.
- Up to 15 square feet of glazed fenestration is permitted to be exempt from the U-factor and SHGC requirements. One side-hinged opaque door assembly up to 24 square feet is exempted from the Fenestration U-factor requirement. These exceptions apply in the prescriptive path only. Special exceptions may apply for Fenestration U-factor requirements in thermally isolated sunrooms. (see IECC section R402.3.5)

Insulation (IECC Sections R303.1.4 and R402.2)

- Insulation R-values are minimum acceptable levels and must be determined according to FTC rule.
- R-values for walls represent the sum of cavity insulation plus insulated sheathing, if any. The second R-value for mass walls applies when more than half the insulation is on the interior of the mass wall.
- The insulation for basement walls must be from the top of the wall down 10 feet below grade or to the basement floor, whichever is less. Basement wall insulation is not required in warm-humid locations as defined in IECC Figure R301.1 and Table R301.1. Insulation requirements for crawl space walls are further specified in IECC section R402.2.10.
- Floor insulation must be installed to maintain contact with the underside of the subfloor decking.
- Access doors from conditioned spaces to unconditioned spaces (e.g., attics and crawl spaces) shall be weatherstripped and insulated to a level equivalent to the insulation on the surrounding surfaces.
- Insulation requirements for slab on grade floors are further specified in IECC section R402.2.9. R-5 shall be added to the required slab edge R-values for heated slabs.

- Special Insulation exceptions related to ceilings with attic spaces, ceilings without attic spaces, masonry veneer and thermally isolated sunrooms are set forth in IECC section R402.

Ducts (IECC Section R403.2)

- Ducts must be tested and verified to have total leakage of no more than 4cfm/100 sq. ft. (or 3cfm if air handler is not installed), except where air handler and all ducts are inside conditioned space.
- Supply ducts in attics shall be sealed and insulated to a minimum of R-8. All other ducts shall be sealed and insulated to a minimum of R-6. Ducts or portions thereof located completely inside the building thermal envelope are exempted from the insulation requirement. Air handlers and filter boxes must also be properly sealed.

Air Sealing (IECC Section R402.4)

- The building envelope is required to be properly sealed and tested, and verified as having an air leakage rate no higher than 3 ACH. Recessed lighting must also be sealed to limit air leakage.

Documentation (IECC Sections R103, R303.3, R401.3)

- The appropriate construction documents and preventative maintenance information must be provided, along with a permanent certificate listing certain insulation, window and HVAC performance information.

Systems (IECC Section R403)

- HVAC system must be properly sized in accordance with ACCA Manual S based on building loads calculated in accordance with ACCA Manual J or other approved methodologies.
- Temperature controls must be installed, including a programmable thermostat where required.
- Mechanical system piping must be insulated to a minimum of R-3. Hot water piping must be insulated to R-3, with certain exceptions.
- Specific requirements apply to circulating hot water systems, mechanical ventilation, snow melt systems, and pools.

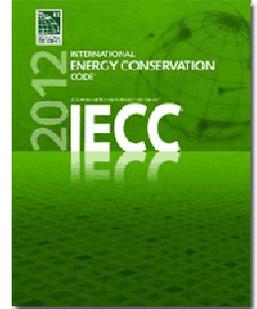
Lighting (IECC Sections R202 and R404.1)

- A minimum of 75% of lamps in permanently installed fixtures must be high-efficacy as defined in the IECC.

2012 IECC Requirements — Prescriptive Method

The International Energy Conservation Code is in effect for ALL new structures, additions, renovations or repairs with the following exceptions: (2012 IECC, 101.4.3)

1. Storm windows over existing fenestration. (Glass)
2. *Replacing the glass only in existing sash and frames.*
3. Existing ceiling, wall or floor cavities that are exposed during construction that are already insulated.
4. *Construction where the existing roof, wall or floor cavities are **not exposed**.*
5. Reroofs where the sheathing is not removed and the insulation is **not exposed**.
6. *Replacing existing doors does not require a vestibule, existing vestibules cannot be removed.*
7. Alterations replacing less than 50% of the lights in a space provided installed interior power is not increased.
8. Alterations that replace existing bulbs and ballasts provided installed interior power is not increased.



****For all other construction projects that involve conditioned space, the requirements of the Energy Code apply**

There are 3 main ways to show compliance with the Energy Code –

1. Complete a Res-Check
2. Hire a licensed design professional to fully engineer and certify the project
3. Build to the specific prescriptive requirements for components AND submit a REScheck Package Generator which is available free at www.energycodes.gov. Notes outlining the computations must be included with submittal.

Requirements for option 3 are outlined here. For further information, see Chapter 4 of the 2012 International Energy Code

WINDOWS – Windows are referred to as “Fenestration”. The MAXIMUM U-factor for fenestrations is 0.32.

The U-factor for a window can be found on the window sticker. *This sticker must **NOT BE REMOVED** from the window until after the inspector has approved removal.* Skylights are allowed a maximum U-factor of .55. **(2012 IECC, TABLE 402.1.1)**

CEILINGS – Ceilings must be insulated with a minimum of R-49. Using energy trusses allows for certain reductions. If insulated with cellulose (blown) insulation, rulers must be placed every 300 sq ft with the depth of the insulation shown and facing the scuttle hole so the inspector can verify the depth. Scuttle holes must be sealed and be insulated the same as the ceiling. **(2012 IECC 402.2.4)**

WOOD FRAMED WALLS – The code requirements for wood frame walls are R-20, or R-13/5. R-value is based on the insulation and other building materials are NOT to be used in the calculation. **(2012 IECC 402.1.2)** If using 2X4 walls, R-13 cavity insulation can be used PLUS R-5 exterior sheathing. If more than 25% of the exterior is covered by structural sheathing, the structural sheathing must be supplemented with insulation of at least R-3. If structural sheathing covers less than 25% of the exterior area, no additional insulation is required. **(2012 IECC Table 402.1.1 footnote h)**

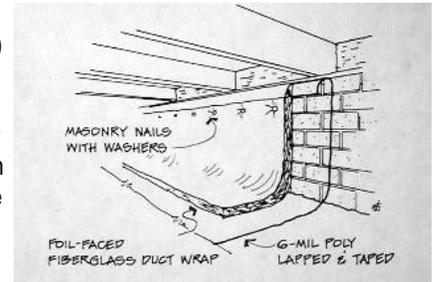
****2012 IECC Table 402.4.1.1 requires that all sources of air infiltration in the Building Thermal Envelope to be sealed. This includes all seams, joints, penetrations, rim joist junctions, openings between window/door jams and walls, sill plates, knee walls, outlet openings, switches and lighting that is placed in a wall separating conditioned and unconditioned spaces.****

 National Fenestration Rating Council MULTIPLE WYLR-1-00014-0001	VINYLUME PRODUCTS, INC. 1000 DOUBLE HUNG Vinyl Frame, Double-glazed, Low E coating (e=0.134, 53), Argon-filled, Silicone foam spacer, Glaze WYLR-1-00014-0001
ENERGY PERFORMANCE RATINGS	
U-Factor (U S/A/P)	Solar Heat Gain Coefficient
0.31	0.36
ADDITIONAL PERFORMANCE RATINGS	
Visible Transmittance	Condensation Resistance
0.48	59
<small>Manufacturer's standard test data always conform to applicable NFRC procedures for determining energy product performance. NFRC ratings are determined in a fixed set of environmental conditions and a standard product size. NFRC does not guarantee any product will meet or exceed the usability of any product for any specific use. Consult manufacturer's literature for other product performance information. ©2012 NFRC, Inc.</small>	

2012 IECC Requirements — Prescriptive Method (continued)

FLOORS - Where a floor covers any unconditioned space, it must have R30 OR insulation sufficient to completely fill the framing cavity, R19 minimum. (2012 IECC Table 402.1.1, footnote g)

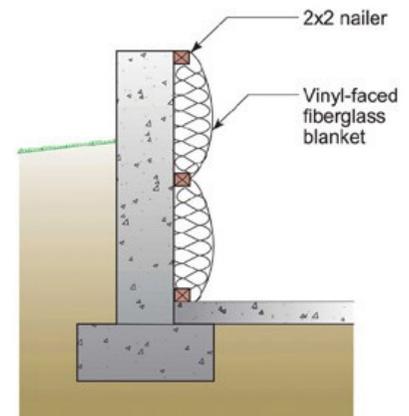
CRAWLSPACES – as an alternative to insulating the floor an unvented crawl space may have the same application as basement walls provided the insulation shall be permanently attached to the wall and extend downward from the floor above to grade and then vertically or horizontally for at Least 24inches. The International Residential Code requires exposed earth to have a class 1 vapor retarder. (2012 IECC 402.2.10)



Studded Basement Wall R-13 Cavity Insulation and R-5 foam backer

BASEMENT WALLS - Basement walls may have either R-10 continuous insulated sheathing on the interior or exterior of the basement walls installed per the Manufacturers Instructions for the application, or R-13 cavity insulation on the interior walls– as in a normally finished basement. If the manufacturer does not list the product for the application, it cannot be used. Insulation must extend from the top of the basement wall to 10 feet below finished grade OR to the floor, whichever is less. (2012 IECC 402.2.8)

***Insulation on the exterior of walls and slabs must have a rigid, opaque and weather resistant covering to protect it from degradation of the thermal performance and it must extend down 6 inches below finished grade. (2012 IECC 303.2.1)



Continuous Interior R-10 Blanket Insulation in Basement

SLAB - The most common area for required slab insulation is on walkout basements where the concrete floor is at or near grade. The slab is required to have R-10 on the outside to the top of the concrete, and down 2 ft below finished grade. Heated slabs are required to be R-15. (2012 IECC Table 402.1.1, footnote d)

Ducts - Supply ducts in attics shall be insulated to a minimum of R-8, all other ducts must be insulated to R-6 unless located COMPLETELY within the Building Thermal Envelope. All ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed to comply with M1601.4.1 of the International Mechanical Code. (2012 IECC 403.2.3) Building cavities may NOT be used for supply side ducts. Ducts shall NOT displace required insulation.

Fireplaces - Wood-burning fireplaces SHALL have gasketed doors and outdoor combustion air. (2012 IECC Table 402.4.1.1)

Lighting - At least 75% of bulbs in permanent light fixtures shall be high efficacy lamps. (2012 IECC 404.1)

Doors- Different types of doors have different U-value requirements. When filling out the RE-Scheck Product Generator, fill in the U-factor for your specific doors and include the catalogue section from the manufacturers showing the information with the list of materials as part of the construction documents. (Doors with over 50% glass are considered FENESTRATIONS so count them with windows.)

