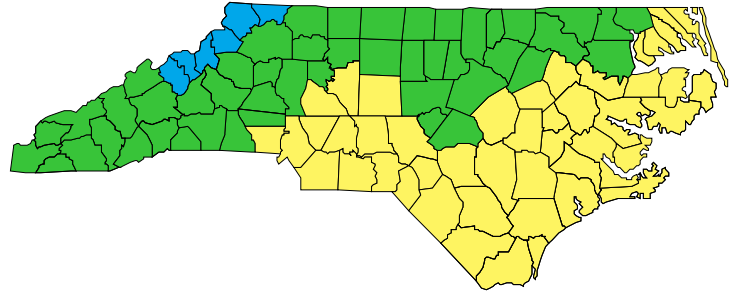


# IECC Compliance Guide for Homes in North Carolina

Code: 2018 International Energy Conservation Code

## 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 prescriptive requirements for the thermal envelope associated with the jurisdiction.
- Use the “Outline of 2018 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.



## The 2018 International Energy Conservation Code

The 2018 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 2018 IECC, contact the ICC or visit [www.iccsafe.org](http://www.iccsafe.org). IECC compliance training is also available from many sources.

## Limitations

This guide is an energy code compliance aid for North Carolina based upon the simple prescriptive option of the 2018 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 North Carolina and does not, therefore, provide a guarantee for meeting the state energy code. For details on the energy code adopted by North Carolina, 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](http://www.reca-codes.com).

CLIMATE ZONE 5		
Alleghany	Avery	Watauga
Ashe	Mitchell	Yancey

CLIMATE ZONE 4			
Alamance	Davie	Hertford	Polk
Alexander	Durham	Iredell	Rockingham
Bertie	Forsyth	Jackson	Rutherford
Buncombe	Franklin	Lee	Stokes
Burke	Gates	Lincoln	Surry
Caldwell	Graham	Macon	Swain
Caswell	Granville	Madison	Transylvania
Catawba	Guilford	McDowell	Vance
Chatham	Halifax	Nash	Wake
Cherokee	Harnett	Northampton	Warren
Clay	Haywood	Orange	Wilkes
Cleveland	Henderson	Person	Yadkin

CLIMATE ZONE 3			
Anson	Dare	Mecklenburg	Robeson
Beaufort	Davidson	Montgomery	Rowan
Bladen	Duplin	Moore	Sampson
Brunswick	Edgecombe	New Hanover	Scotland
Cabarrus	Gaston	Onslow	Stanly
Camden	Greene	Pamlico	Tyrrell
Carteret	Hoke	Pasquotank	Union
Chowan	Hyde	Pender	Washington
Columbus	Johnston	Perquimans	Wayne
Craven	Jones	Pitt	Wilson
Cumberland	Lenoir	Randolph	
Currituck	Martin	Richmond	

	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	0.30	0.55	NR	49	20 or 13 + 5	13/17	30	15/19	10, 2 ft	15/19
Zone 4	0.32	0.55	0.40	49	20 or 13 + 5	8/13	19	10/13	10, 2 ft	10/13
Zone 3	0.32	0.55	0.25	38	20 or 13 + 5	8/13	19	5/13	0	5/13

NR indicates No Requirement

# Outline of 2018 IECC Requirements for North Carolina 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 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 2018 IECC's prescriptive compliance option for the appropriate climate zones (Table R402.1.2) 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. An area-weighted average of fenestration products is permitted to satisfy these requirements. (See IECC section R402.3.)
- Window, door and skylight U-factors and SHGCs must be determined by an accredited, independent laboratory, and labeled and certified by the manufacturer, in accordance with a National Fenestration Rating Council (NFRC) rating. Products without an NFRC label must use the default values in IECC section R303.1.3. See [www.nfrc.org](http://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. 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 Federal Trade Commission 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 R301.3(1). Insulation requirements for crawl space walls are further specified in IECC section R402.2.11.
- Floor insulation must be installed to maintain contact with the underside of the subfloor decking. Refer to the code for details allowing insulation to be installed on the lower side of the ceiling cavity.
- 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. Vertical access doors are permitted to meet the fenestration requirements in Table R402.1.2.
- Insulation requirements for slab on grade floors are further specified in IECC section R402.2.10. R-5 insulation shall be provided under the full slab area for heated slabs, in addition to slab edge insulation R-values.

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

## Ducts (IECC Section R403.3)

- 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 located inside conditioned space. Air handlers and filter boxes must also be properly sealed.
- Supply and return ducts shall be sealed and insulated as follows:

Duct Location	< 3 inches in diameter	≥ 3 inches in diameter
Attic	R-6	R-8
Other portions of the building	R-4.2	R-6
Completely inside conditioned space	Exempt	Exempt

- Special provisions apply to ducts buried within ceiling insulation. (See IECC section R403.3.6.)

## 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 at 0.2 inch w.g. (50 Pascals) in climate zones 3 through 5. 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. New or replacement heating and cooling equipment must meet or exceed federal minimum efficiency requirements for geographic location in which it is installed.
- 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 90% of permanently installed fixtures must contain only high-efficacy lamps as defined in the IECC.