



**Building Department
CITY OF GOSHEN**

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Attention Builders and Remodelers:

We would like to remind you that the 2012 Indiana Energy Code has been adopted and went into effect for all applications permitted after April 5, 2012.

There are three methods of compliance to choose from. You will be required to choose which type of compliance method at the time of permit application:

- Prescriptive (as prescribed by code)
- Total UA (allows building envelope trade-offs)
- Performance (most flexible, but requires 3rd party performance analysis)

The state requires a design professional or builder to complete a Certificate of Energy Code Compliance (sample enclosed). This must be attached to the electrical panel and is to be furnished by the builder or third party agency prior to final inspection. A copy will also be provided to the building official.

If the 'Performance' path is used, the performance documentation will be provided to the building official prior to the final inspection.

Please take a moment to review the enclosed information regarding the adoptions of the state code. Keep in mind that portions of this code could be amended at the state level, so any changes to this code will take place at the time those amendments are adopted.

To stay informed on any code changes, please visit [.in.gov/](http://www.in.gov). Also, as many of you know, there are multiple education opportunities with IBA, BAEC or NAHB.

To retain a copy of the current Chapter 11: 2012 Indiana Energy Efficiency Code, please visit the link below:

[://www.in.gov/legislative/iac/20120201-IR-675110084FRA.xml](http://www.in.gov/legislative/iac/20120201-IR-675110084FRA.xml).

In the future, it may be necessary to amend these procedures after these changes are in effect. If you have any questions, please do not hesitate to contact our office at **574-534-1811**



2012 Energy Code

This code affects all homes permitted after April 5, 2012. The builder must choose the Prescriptive, Total UA or Performance Method of compliance. In addition to establishing compliance through one of those methods, the following red items MUST be completed for ALL paths and black items completed for Prescriptive and Total UA paths only. This information provided by the State of Indiana is based on code changes and written interpretations and is subject to change.

Main Mandatory Requirements

- All insulation materials must be marked with R-Value or installer must post a certificate listing all insulation values on conspicuous location on job site----also, one thickness marker in attic for every 300 sf.
- The builder or design professional must complete a certificate that lists the predominant R-Values of insulation for ceilings, walls, foundation, ductwork, U-factors for windows and efficiency levels of HVAC and water heating equipment. This certificate must be attached to the electrical panel.
- Attic hatches from conditioned to unconditioned spaces must be weather stripped and insulated to a level equivalent to the surrounding area. A "dam" or equivalent must prevent attic insulation from spilling into living space.
- Air Leakage----The building thermal envelope shall be sealed to limit infiltration (see air sealing checklist). The checklist must be field verified, by an approved party OR a blower door test can be performed after construction and must demonstrate the air leakage rate is below 7 ACH @50pa.
- All ducts, air handlers and filter boxes must be sealed. The duct tightness must be verified with a ductblaster test. (Not required if all ducts and air handler are located within the conditioned space).
- Supply ducts located in the attic must be insulated to R-8. All other ducts must be insulated to R-6 (Note: Supply ducts insulated to R-6 if using the Performance Path) Exception: Ducts within conditioned space.

- New wood burning MASONRY fireplaces must have gasketed doors and outdoor combustion air.
- All recessed lights must be IC-rated and the housings must be sealed with gasket or caulk to the drywall.
- At least one thermostat shall be installed that can be programmed. Heat pumps having supplementary electric-resistance heat shall have controls that, except during defrost, prevent supplemental heat operation when the heat pump compressor can meet the heating load.
- Building cavities may not be used as supply ducts.
- Mechanical system piping capable of carrying fluids above 105 F or below 55 F shall be insulated to at least R-3. Also, all circulating hot water system piping shall be insulated to at least R-2 and shall include a switch that can turn off the hot water pump when the system is not in use.
- HVAC equipment must be sized according to ACCA Manual J eighth edition.
- Snow melt Controls-Snow and ice melting systems, supplied through energy service to the building, shall include automatic controls capable of shutting off the system when the pavement temperature is above 50 F and no precipitation is falling and an automatic or manual control that will allow shutoff when the outdoor temperature is above 40 F.
- Pools----Pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting.
- Pool heaters fired by natural gas shall not have continuously burning pilot lights. Time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.
- Heated Pools shall be equipped with a vapor-retardant pool cover on or at the water surface. Pools heated to more than 90 F shall have a pool cover with a minimum insulation value of R-12.
- Lighting---A minimum of 50 percent of the lamps in permanently installed lighting fixtures shall be high efficacy lamps.

NOTE: These are just guidelines extracted from the State Code. Please refer to and read the entire code.

[://www.in.gov/legislative/iac/20120201-IR-675110084FRA.xml](http://www.in.gov/legislative/iac/20120201-IR-675110084FRA.xml)



Indiana Energy Code

CODE MEASURE	PRESCRIPTIVE PATH	TOTAL UA PATH	PERFORMANCE PATH
1101.3---Materials, systems and equipment shall be identified to allow determination of compliance	X	X	X
1101.4---Insulation identified with R-value marked on product	X	X	X
1101.4.1---Rulers, with R-value identified, every 300 sf in attic	X	X	X
1101.4.2---Install insulation so R-value mark is readily observable	X	X	X
1101.5---Fenestration products shall bear a label and certification (NFRC IOO)	X	X	X
1101.6---R-value determined in accordance with the 16 CFR 460	X	X	X
1101.7---All materials, systems and equipment installed in accordance with manufacturers instruction. Also, exposed foundation insulation shall be protected.	X	X	X
1101.8---A permanent certificate must be posted on or in the electrical panel, listing the R-value of all insulation, fenestration u-factors, equipment efficiencies.	X	X	X
1102.1---Thermal envelope shall meet requirements of Table N1101.2	X	X	
1102.1.1---R-value computation method	X	X	
1102.1.2---U-factor alternative Table can be used	X	X	
1102.1.3---Total UA Alternative Compliance		X	
1102.2.1and 1102.2.2---Attic Insulation R-value allowances	X		
1102.2.3---Access hatches and doors weatherstripped and insulated	X	X	X
1102.2.4 and 1102.2.5---Mass Wall and Steel frame requirements	X	X	
1102.2.6---Floor insulation installed so permanent contact with subfloor decking	X	X	X
1102.2.7---Conditioned basement walls FULLY insulated top to bottom	X	X	
1102.2.8---Slab insulation according to Table N1102.1	X	X	
1102.2.9---Crawl Space Walls insulating floors vs. walls	X	X	
1102.2.10---Insulation not required on horizontal masonry support	X	X	X
1102.2.11---Sunroom insulation requirements	X	X	
1102.3---Fenestration requirements	X	X	
1102.4---Air Leakage Requirements (1102.4.1-1102.4.5) This includes blowerdoor testing (or air leakage checklist review), masonry fireplace requirements, Fenestration Air Leakage Section and IC Rated Can Lights.	X	X	X
1102.5---Fenestration Trade-offs	X	X	
1103.1.1---Programmable thermostat installed	X	X	
1103.1.2---Heat pump controls to prevent unnecessary supplemental heat operation	X	X	
1103.2.1---Supply ducts in attic R-8; all others R-6 outside conditioned space*	X	X	

	PRESCRIPTIVE PATH	TOTAL UA PATH	PERFORMANCE PATH
1103.2.2---All ducts, air handlers, filter boxes shall be sealed and duct tightness must be tested with a duct blaster and may not exceed maximum amounts.	X	X	X
1103.2.3---Building cavities may not be used as supply ducts	X	X	
1103.3---Refrigerant Lines insulated to R-3	X	X	
1103.4---All circulating hot water piping shall be insulated to at least R-2	X	X	
1103.5---Mechanical ventilation intakes shall have gravity dampers	X	X	
1103.6---HVAC equipment must be sized according to M1401.3	X	X	
1103.7---Snow-melt system controls	X	X	
1103.8---Pool requirements	X	X	
1104.1---Lighting must be 50 percent high-efficacy lamps	X	X	
*Performance Path Requires R-6 on ALL ducts outside conditioned space	X	X	

This information provided by the State of Indiana is based on code changes and written interpretations and is subject to change.

EXAMPLE:

Prescriptive Path:

Basement Walls: R-10/13
 Crawlspace walls: R-10/13
 Slabs: R-10, 2' down
 Rim & Band: R-13+5 or R-20
 Exterior walls: R-13+5 or R-20
 Ceilings: R-38 Flat, R-38 Vaulted.
 Windows: .35 U-Factor or lower
 Doors: Standard insulated steel

UA Trade-off:

Basement Walls: R-10
 Crawlspace walls: R-10
 Slabs: R-10, 2' down
 Rim & Band: R-13+3
 Exterior walls: R-13+3
 Ceilings: R-38 Flat, R-38 Vaulted.
 Windows: .35 U-Factor or lower
 Doors: Standard insulated steel

Typical Performance Path:

Basement walls: R-10, 4' down
 Crawlspace walls: R-10 interior
 Slabs: R-10, 2' down
 Rim & Band: R-13
 Exterior walls: R-13 & OSB
 Ceilings: R-38 Flat, R-30 Vaulted.
 Windows: .35 U-Factor or lower
 Doors: Standard insulated steel

NOTE: Above listed are typical assemblies and may vary.

(Example of Electrical panel sticker to be provided by builder or third party)

Certificate of Energy Code Compliance

2012 INDIANA ENERGY CODE

Builder Name: _____

Property Address: _____

Conditioned Floor Area: _____ sf Date: _____

Compliance Method Used: Prescriptive/Total UA/Performance (Circle One)

Builder or Registered Design Professional:

Signature: _____ Printed: _____

R-VALUES

Ceiling: Vaulted R-: _____ Flat R-: _____

Slab on grade R-: _____

Floors Over Unconditional Space R-: _____

Walls: Above Grade Cavity R-: _____ Sheathing R-: _____

Below Grade Interior R-: _____ Below Grade Ext R-: _____

If not full wall basement insulation, # of ft from top of wall: _____

Are all HVAC ducts within the conditioned space? Y / N (Waive duct test if yes)

R-value of ducts outside conditioned space R-: _____

Windows U-: _____ SHGC: _____ Doors R-: _____

Skylights U-: _____ SHGC: _____

SYSTEMS

Heating Systems Type: _____ Efficiency: _____ (AFUE or HSPF)

Cooling Systems Type: _____ Efficiency: _____ (SEER)

Water Heater Type: _____ Efficiency: _____ (EF)

AIR LEAKAGE/DUCT LEAKAGE

Independent Inspecting Firm: _____

Air Leakage: _____ ACH50 (Maximum Allowable: 7 ACH50)

Duct Leakage to Exterior: _____ cfm25 (Maximum Allowable: _____ cfm 25)

Air Leakage Test Pass? Y / N / NA Duct Leakage Test Pass? Y / N / NA

If Alternative Visual Option was performed, circle NA for Air Leakage Test and initial here that all Code Checklist items were met: _____

Testing Firm Signature: _____



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Residential Energy Code Submittal Requirements

The Indiana Department of Homeland Security has adopted the Indiana 2012 Energy Code effective April 5th, 2012. Please refer to the original document for specific details:

<http://www.in.gov/legislative/iac/20120201-IR-675110084FRA.xml.pdf>

The 2012 Indiana Energy Code contains specific design energy requirements for all residential projects. There are three (3) design paths:

- **Option #1: Prescriptive path as outlined in IRC Chapter 11**
- **Option #2: Total UA Alternative path (trade-off) as outlined in IRC section N1102.1.3 & IECC 402.1.4**
- **Option #3: Simulated Performance Alternative (Performance) path as outlined in IECC section 405**

Note: All three options have similar requirements for submittal documents to meet the code requirements including:

- **Building envelope information**
- **A Manual J equipment design in accordance with the IRC section M1401.3**
- **A Manual D duct design in accordance with the IRC section M1601.1**

Option #1 Prescriptive Path

The Prescriptive Path requirements for the building envelope are found in Chapter 11 of the 2009 IRC. Northern Indiana is located in Climate Zone 5, as shown in Figure & Table N1102.1. All prescriptive information shall be taken from the various tables using Zone 5 requirements.

The Prescriptive Building Envelope submittal shall include, at the minimum, the following information on the submitted plans.

- **Address of the building (this is a site specific submittal)**
- **Define/ delineate your Building Thermal Envelope**
- **Insulation materials; R values denoted for each individual area (wall, ceiling, floor over garage, etc.)**
- **Crawl space insulation for structural floors and other crawl space areas. (Specify whether the foundation wall or the structural floor system is to be insulated. See requirements of section N1102.2.9)**
- **Fenestration U factors 402.3**
- **Duct sealing and insulation. 403.2**
- **Manual J, specific to the site**
- **Manual D duct design, specific to the building**
- **Lighting equipment 404.1**
- **Specific insulation 402.2**

Option #2 Total UA Alternative Path

The total UA alternative path option of showing compliance is found in section N1102.1.3 of the IRC and section 402.1.4 of the IECC. This method is commonly known by users of RESCHECK. The 2009 current version of RESCHECK is available from the Department of Energy. (Older versions can not be used to show compliance with the 2009 IRC and IECC.)

<http://www.energycodes.gov/rescheck/>

Note: The Building Plans must clearly define and delineate the building thermal envelope.

RESCHECK submittal must include the following information:

- **Site specific address (including City):**
- **Conditioned floor area**
- **Insulation Type**
- **R-value for all areas**
- **Specify location where the insulation is being used (attic, floor over unconditioned space, walls, floors over air space, etc.) This information must be specific. Merely listing "Wall 1, Wall 2, etc.", will not provide sufficient information to the Building Department.**
- **Specify whether continuous or cavity insulation.**
- **Using Orientation: "unspecified" is not an acceptable description of a wall, window, or door location. Please specify one of the following orientations: "Front, Back, Left, or Right" and include the square footage of the wall, window, or door on each orientation.**
- **Fenestration U -Factors**
- **Accurate square footage measurements are critical.**

The 2012 Indiana Energy Code requires a site specific submittal.

Additional required details are listed below:

- **Duct sealing and insulation.**
- **Manual J, specific to the site.**
- **Manual D duct design, specific to the building**

Option #3 Simulated Performance Alternative (Performance) Path

The Simulated Performance Alternative Path is described in Section 405 of the 2009 IECC.

This path still requires mandatory compliance with the following:

- **Air leakage (402.4)**
- **Maximum fenestration U factor (402.5)**
- **SHGC (402.5)**
- **Systems (403) requirements.**

The Performance Path method of compliance requires the submittal of energy compliance documents but has the additional task of on site inspections to be performed by a 'RESNET Certified Rater' and an Energy Compliance Certificate submitted prior to the Final Building Inspection.

The Building Envelope compliance document (provided by RESNET Certified Rater) shall provide, at the minimum, the following information on the submitted plans:

- *Site specific address*
- *The Energy Code Inspection Checklist (generated by REMRATE) documenting the building component characteristics of the proposed design. (Insulation type and values and location, U value and SHGC of fenestrations)*
- *Square footage shall use the following; "Square footage-method for calculating, ANSI Z765-2003"*
- *Mechanical systems*
- *Name of the individual completing the compliance report*
- *Name and version of the compliance software tool*

Note: It is very important that the insulation values be detailed as to the specific area and the required R-value for that particular area. Listing as R-19/30 for floors, walls or similar is not acceptable.

Other details are required as listed below:

- *Duct sealing and insulation.*
- *Manual J specific to the site*
- *Manual D duct design specific to the building*

Manual J Submittal Information

All three compliance paths outlined above require the submittal of a Manual J at the time of plan/permit application submittal. The Manual J is a site specific submittal. Manual J documents may be calculated using one of the three ACCA accredited programs. Currently, these are limited to Wrightsoft, Nittec, and Elite.

The specific prescriptive design criteria to be used for Elkhart County Manual J entries are as follows:

Elevation:	827 ft. (Goshen Airport)
Latitude:	41.58 degrees north
Winter heating 99% Dry Bulb:	1° outdoor
Summer Cooling 1% dry bulb:	89°
Coincident wet bulb:	73
Design Grains difference at 50% RH:	34

Daily Range:	Medium (M) (Goshen Airport)
Relative Humidity:	40% Winter and
50% Summer	
Indoor Design temperatures:	
Heating:	72°
Cooling:	75°
Heating Temperature Difference (HTD):	71°
Cooling Temperature Difference (CTD):	14°

SHGC: While not required per table 402.1.1 of the IECC the SHGC is still required data for Manual J.

SHGC should be taken directly from sticker on glass.

If not known, either use default as per table 102.1.3(3) of the IECC or equation $SHGC = .87 \times SC$ (shading Coefficient) under 19-23 of Manual J.

Altitude Correction Factor (ACF): Site specific to elevation (See Address Wizard)

Wind Velocity Values are 15 mph for heating and 7.5 mph for cooling

All Manual J submittals shall list the specific mechanical equipment to be used and should include A/C.

All Manual J submittals shall match the building envelope compliance information regarding square footage of the building, U values and R values, and shall represent the orientation of the building in a North, South, East, West direction.

Manual J submittals for radiant floor heating systems shall include a manifold layout summary showing tubing size, length of tubing, and tube loop spacing for each zone and each room.

Manual D Submittal

A Manual D duct design is required for each building. The Manual D submittal shall be submitted with Manual J and building plans. Please design the Manual D with A/C included.

- Manual D sizing is encouraged to be designed for A/C due to restrictions that may render the system inadequate should cooling be added at a later time.**
- A complete duct schematic drawn to scale shall be legible, show location and sizes of trunks, runouts and registers, return air**

openings and CFM at each register. Identification of the longest supply and return runs are encouraged.

- *Fan performance data sheet showing the fan speed and CFM.*
- *Duct sizing worksheet (See Worksheet)*

• *Effective length calculation worksheet (See Worksheet) – please provide a minimum of 3 longest runs for supply and return ducts.*

- *Friction rate worksheet (See Worksheet)*

General Information

In order to insure inspectors have all required data, all Product Informational Stickers, Tags and Labeling will be left in place until inspection has been completed. (Examples: window stickers, water heaters, exterior doors, insulation, etc.)

It is the responsibility of the homeowner/ builder to be compliant to current code requirements.