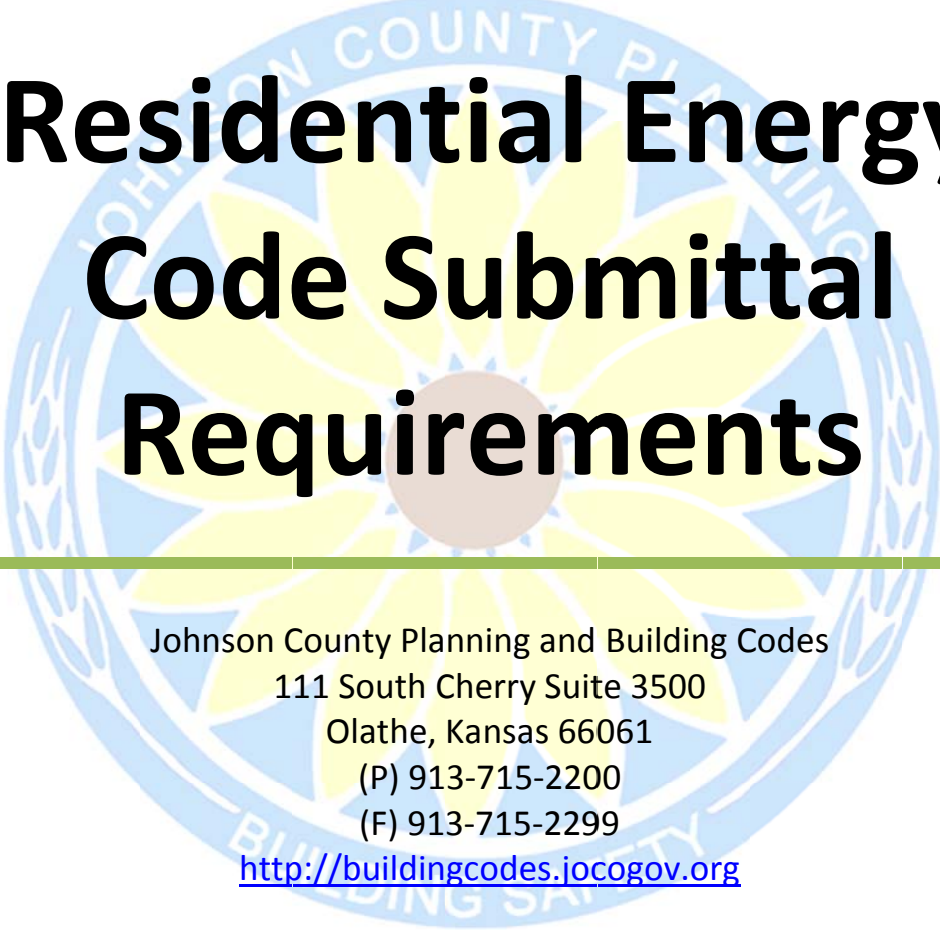


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# Residential Energy Code Submittal Requirements

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Johnson County Planning and Building Codes  
111 South Cherry Suite 3500  
Olathe, Kansas 66061  
(P) 913-715-2200  
(F) 913-715-2299

<http://buildingcodes.jocogov.org>

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Questions? Contact staff by calling (913) 715-2200.

## **Johnson County, Kansas**

### **Residential Energy Code Submittal Requirements**

The Johnson County Building Safety Department has adopted the 2012 International Codes effective May 13, 2013. Included as part of the adoption is the International Residential Code (IRC). The IRC contains specific design and submittal requirements for energy compliance. The submittal requirements for residential energy compliance are outlined below.

Energy code submittals are required for all residential projects in accordance with the applicable provisions of the 2012 IRC. There are three design path options available.

- Option 1: Prescriptive path as outlined in IRC Chapter 11.
- Option 2: Simulated Performance Alternative (Performance) path as outlined in IRC Section N1105.
- Option 3: HERS Rating score of 85 or less as specified in IRC amended Section N1101.1, using *RESNET*, *REScheck*, or any approved design software.

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

- Building envelope information.
- Manual J equipment design in accordance with IRC Section M1401.3.
- Manual D duct design in accordance with IRC Section M1601.1.
- All “**Mandatory**” requirements as specified in chapter 11 of 2012 IRC, and amended by Johnson County Code of Regulation regardless of any selected option shall be provided.

## Option 1 Prescriptive Path

The prescriptive path requirements for the building envelope are found in Chapter 11 of the 2012 IRC. Unincorporated Johnson County is located in Climate Zone 4, as shown in Table N1101.10. All prescriptive information shall be taken from the various tables using Zone 4 requirements.

The prescriptive building envelope submittal shall include, at a minimum, the following information on submitted plans.

- Site specific building address.
- Define the building thermal envelope. This information shall be shown on the plans.
- Clarify “*Air Barrier*” assembled material(s) as prescribed in 2012, IECC section 402.4.1.2.1.
- Insulation materials; R values denoted for each individual area (wall, ceiling, floor, basement walls, 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 in Section N1102.2.10.)
- Fenestration U factors in Section N1102.3.
- Duct sealing and insulation in Section N1103.2. Note that Section N1103.2.3 has been deleted. By deleting this section, the building framing cavities may still be used as ducts or plenums.
- Manual J, specific to the site.
- Manual D duct design, specific to the building.
- The mandatory lighting equipment in Section N1104.1 has been deleted.
- Specific insulation requirements in Section N1102.2. Note, the wood frame R-Value listed in Table N1102.1.1 for Climate Zone 4 has been amended to 13.

## Option 2 Simulated Performance Alternative Path

The Simulated Performance Alternative Path as explained in Section N1105 of the 2012 IRC. This method still requires mandatory compliance with the following:

- Air leakage in Section N1102.4. Note, In Section N1102.4.1.2, the air leakage rate in Zones 3 through 8 have been amended to 5 air changes per hour.
- Maximum fenestration U factor and SHGC in Section N1102.5.
- System requirements in Section N1103.

The Performance Path method of compliance requires the submittal of energy compliance documents meeting all requirements in Section N1105.4. An Energy Compliance Certificate shall be submitted and accepted **prior** to the scheduling of the final building inspection.

The Building Envelope compliance document shall provide, at a minimum, the following information on the submitted plans.

- Site specific address.
- An inspection checklist documenting the building component characteristics of the proposed design. (Insulation type, values, and location, U value and SHGC of fenestrations).
- Accurate square footage.
- Name and qualifications of the individual completing the compliance report.
- Name and version of the compliance software tool.

**Note:** It is important the insulation values be detailed as to the specific area.

Other details as listed below:

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

## **Option 3 HERS Rating Method**

Compliance for the HERS method will require field verification and diagnostic testing by an approved and certified Home Energy Rating System (HERS) rater. Each rater shall be considered a special inspector and shall demonstrate competence to the satisfaction of the building official.

The building energy compliance features, HERS field verification requirements, and applicable special feature eligibility criteria shall be identified on a Certificate of Compliance. The builder or subcontractor shall submit all applicable installation certificate documentation. The certificate shall certify that the construction/installation complies with all applicable requirements and complies with all applicable field verification and eligibility criteria. Field verification shall be performed by a HERS rater and documented on applicable Certificate of field Verification and Diagnostic Testing documentation that conforms to required requirements and procedures.

## **Manual J Submittal Information**

The three compliance paths outlined require the submittal of a Manual J summary at the time of permit application submittal. Manual J is a site specific submittal. All Manual J documents must be calculated using ACCA Manual J, or other approved methods..

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

All manual J submittals shall match the building envelope compliance information regarding square footage of the building, U values, 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, tubing length, and tube loop spacing for each zone and room.

Customer expectations in terms of temperature and humidity must be addressed along with health, safety, and building code compliance.

## Manual D Submittal Information

A Manual D duct design is required for each home. The Manual D submittal may be deferred, but must be received for plan review 2 weeks prior to rough-in inspection.

Submit the Manual D design in a schematic format rather than component lists. The design must include take-off locations and size, register size, return air opening size, duct run length and size. Please design with A/C included. The schematic design enables the building inspector to have a document that can be used for inspection.

## Johnson County Design Criteria for Manual J Entries

Elevation:	1100'
Latitude:	38° North
Longitude:	94°
Winter Heating (99% dry bulb):	4
Summer Cooling (1% dry bulb):	96
Coincident (wet bulb):	75
Daily Range:	High (H)
Relative Humidity:	55%
Indoor Design Temperatures:	
Heating	72°
Cooling	75°
Heating Temperature Difference (HTD)	68°
Cooling Temperature Difference (CTD)	21°

SHGC should be taken directly from sticker on glass.  
 If not known, use either the default per Table N1102.1.3 or the equation  $SHGC = .87 \times SC$  (shading coefficient) in Section 19-23 of Manual J.

Insulation and Fenestration Requirements by Component								
Window U-FACTOR <sup>b</sup>	SKYLIGHT U-FACTOR <sup>b</sup>	CEILING R-VALUE <sup>B</sup>	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE <sup>f</sup>	FLOOR R-VALUE	BASEMENT WALL R-VALUE <sup>c</sup>	SLAB R-VALUE & DEPTH <sup>d</sup>	CRAWL SPACE WALL R-VALUE <sup>c</sup>
.35	.55	49	13	8/13	19	10/13	NR	10/13

## Required Johnson County Inspections

1. **Foundation Insulation.** For insulation that will be covered by backfill.
2. **Fenestration.** For windows, skylights, sliding doors, etc. Factory labels must remain on the glazing to show UF factor, solar heat gain, and air leakage as required in Section N1102.3 and N1102.4.
3. **Thermal Envelope (exterior house wrap).** All house wrap, air barrier or suitable film shall be installed in accordance with manufacturer's recommendations, including overlapping, inside corners and taping. All penetrations through the building wrap have been sealed. Window and door flashing has been installed in accordance with manufacturer's specifications.
4. **Rough Energy Compliance.** All joints, seams and penetrations shall be caulked, foamed, or otherwise gasketed to prevent air leakage. Factory labels must remain on the glazing to show fenestration, solar heat gain and air leakage. Air barriers are in place, including rims joists. Air tight recessed lighting in attic spaces, required dampers (mechanical or gravity) and insulation behind junction boxes in exterior walls shall be in place.
5. **Insulation-Mechanical systems.** This inspection shall be requested after the rough-in inspection has been approved. This inspection is to verify that all supply and return air ducts outside the conditioned space are insulated in accordance with Section N1103.2. All mechanical and circulation hot water systems shall be insulated in accordance with Section N1103.3 and N1103.4.
6. **Insulation.** This inspection includes all cavity or continuous (blanket) insulation that will be concealed. For blown in attic insulation, baffles at soffit vents, and inch markers every 300 sq. ft. shall be installed at the time of inspection.
7. **Final Energy Compliance.** A permanent certificate shall be posted on the service disconnect. The certificate shall be completed by the appropriate builder, rater, or design professional. The certificate shall list the R-values of insulation installed in or on ceiling/roof, walls, foundation wall, and ducts outside of conditioned spaces, as well as U-factors for fenestration. The certificate shall list the type and efficiency rating of heating, cooling and the water heating equipment. Crawl space and unfinished basement walls blanket insulation may be inspected at this time.

**Provide access to the attic spaces containing blown in insulation or mechanical equipment.**