

## 2009 Energy Code Checklist For Residential Construction

(Required for all New Single-Family and Multi-Family Dwellings, Additions and Renovations)

The State of South Carolina has adopted the 2009 International Energy Conservation Code (IECC), which goes into effect beginning January 1st, 2013. This form is required to be filled out and submitted prior to issuance of the Certificate of Occupancy.

Project Address:		Permit #
Builder:		License #
Phone:	Email:	Date
Project Type:	<input type="checkbox"/> Single-Family Dwelling <input type="checkbox"/> Townhome <input type="checkbox"/> Duplex <input type="checkbox"/> Addition <input type="checkbox"/> Renovation	

### Required Documentation:

1. **Energy Compliance – Choose One method.** All methods must meet the Mandatory Requirements (2).

- Prescriptive** - Includes Mandatory Requirements (2), Prescriptive Requirements (3) and Energy Certificate (4).
- Trade Off** - Includes Mandatory Requirements (2) and Energy Certificate (4). Attach Rescheck Documentation to show compliance. Go to: [www.energycodes.gov/rescheck](http://www.energycodes.gov/rescheck) (It's easy and free)
- Performance** – Includes Mandatory Requirements (2), Energy Certificate (4). Attach documentation to show compliance. Documentation must include standard reference design and proposed design.

2. **Mandatory Requirements** – Building envelope air tightness and insulation installation shall be demonstrated to comply with the following.

Mandatory Requirements	
1. Building Thermal Envelope (402.4.1) - Building thermal envelope shall be durably sealed to limit infiltration.	<input type="checkbox"/> Complied
2. Air Sealing and Insulation (402.4.2) – Building envelope air tightness and insulation shall be demonstrated to comply with one of the following options - <b>CHOOSE ONE</b>  <input type="checkbox"/> <b>Blower Door Test</b> – <i>Individual performing the test is required to be HERS or BPI Certified</i>  Air leakage is less than (7) seven air changes per hour at a pressure of 50 pascals.  Test Performed By: _____  Address: _____  Date Test Was Performed: _____  <input type="checkbox"/> <b>HERS Certified</b> <input type="checkbox"/> <b>BPI Certified</b>  To locate a certified professional log onto: <a href="http://www.energy.sc.gov/">http://www.energy.sc.gov/</a> <a href="http://www.resnet.us/trade/home-energy-raters-hers-raters">http://www.resnet.us/trade/home-energy-raters-hers-raters</a> <a href="http://www.bpi.org/">http://www.bpi.org/</a>	<input type="checkbox"/> Complied <input type="checkbox"/> N/A
<input type="checkbox"/> <b>Visual Inspection</b> – <i>Building envelope tightness and insulation inspection shall be considered acceptable when items listed in Table 402.4.2 are field verified.</i>	<input type="checkbox"/> Complied with Table 402.4.2 <input type="checkbox"/> N/A

### Mandatory Requirements - Continued

3. Fireplaces ( <b>State Amendment</b> ) Wood burning fireplaces shall have tight-fitting flue dampers and outdoor combustion air.	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
4. Fenestration Air Leakage (402.4.4) – Windows, sliding glass doors, skylights < 0.3 cfm/sf	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
5. Fenestration Air Leakage (402.4.4) – Swinging Doors < 0.5 cfm/sf	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
6. Recessed Lighting (402.4.5) – IC Rated, Sealed w/ Gasket or Caulk and Air Tight	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
7. Heating/Cooling System Controls (403.1) – Programmable Thermostat Required	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
8. HVAC Duct Sealing (403.2) – All ducts sealed with approved material	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
9. HVAC Duct Tightness Testing (403.2.2)– <b>CHOOSE ONE</b> <i>Note: Individual performing test is required to be HERS or BPI Certified.</i>  <input type="checkbox"/> <b>Post Construction Test</b> – Leakage to outdoors less than or equal to 8 cfm per 100 sf of conditioned floor area or a total leakage of less than or equal to 12 cfm per 100 sf of conditioned floor area at a pressure differential of 25 pascals. Includes Manufacturer's Air Handler Enclosure.  <input type="checkbox"/> <b>Rough In Test</b> - Total leakage is less than or equal to 6 cfm per 100 ft2 of conditioned floor area at a pressure differential of 25 pascals including Manufacturer's Air Handler Enclosure. If Air Handler is not installed, total leakage shall be less than or equal to 4 cfm per 100 ft2.  Test Performed By: _____ Address: _____ Date Test Was Performed: _____	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
10. Building Cavities (403.2.3) - Building framing cavities shall not be used as supply ducts.	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
11. Mechanical Piping Insulation (403.3) – R3 Minimum	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
12. Circulating Hot Water System (403.4) – Piping insulated R2 minimum	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
13. Mechanical Ventilation (403.5) – Outdoor air intakes/exhaust require dampers.	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
14. Lighting Equipment (404.1) - 50% of the bulbs installed in permanent lighting fixtures shall be high efficiency (CFL's, LED's, etc.)	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
15. HVAC Equipment Sizing (403.6) – HVAC equipment shall be sized based on building loads calculated in accordance with ACCA Manual J.	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A

**Builder Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

### 3. Prescriptive Requirements

#### Minimum Fenestration, Insulation and Energy Requirements (Climate Zone 3)

Fenestration U-Factor	0.50	Windows, Opaque Doors, Glazed Doors U = Thermal Transmittance Factor	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Glazed Fenestration SHGC	0.30	SHGC = Solar Heat Gain Coefficient	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Skylight U-Factor	0.65		<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Ceiling Insulation	R30		<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Exterior Wood Frame Wall	R13		<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Floor Over Un-Conditioned Space	R19		<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
HVAC Ducts in Attics	R8	R6 required in unconditioned basements and crawl spaces	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Conditioned Basement Wall	R 5/13	R5 Continuous or R13 Cavity	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Mass Wall	R 5/8		<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Crawl Space Wall (Closed)	R 5/13	R5 Continuous or R13 Cavity	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Slab on Grade Floors	0	R5 For Heated Slabs on Grade	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Cold Formed Steel Framing	Table 402.2.5	Cold Formed Steel Framing R Values meet the requirements of Table 402.2.5	<input type="checkbox"/> Complied	<input type="checkbox"/> N/A
Access Hatches and Doors - Doors from conditioned to unconditioned spaces shall be weather stripped and insulated.			<input type="checkbox"/> Complied	<input type="checkbox"/> N/A

**Builder Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**4. Energy Certificate** – This form is required to be filled out complete and posted on or in the electrical panel box.

<b>Energy Efficiency Certificate</b>		
Permit # _____		
Address: _____		
_____		
<hr/>		
Insulation Ratings	R-Value	
<b>ROOF/CEILING</b>	With Attic	R - _____
	Without Attic	R - _____
<b>WALLS</b>		
Frame	R - _____	Basement R - _____
Mass	R - _____	Crawlspace R - _____
<b>FLOORS</b>	Over Unconditioned Space	R - _____
<b>HVAC DUCTS</b>	Attice Space	R - _____
	Basements and Crawl Space	R - _____
Fenestration Ratings	U - Factor	SHGC
Opaque Doors	_____	_____
Windows	_____	_____
Skylights	_____	_____
Equipment Performance	Efficiency	
Heating System	HSPF/AFUE	_____
Cooling System	SEER/COP	_____
Water Heater/Boiler	EF/Ec or E1	_____
<hr/>		
Builder Signature: _____		
Date: _____		
Adopted Energy Code Edition: _____		
<b>THIS CERTIFICATE SHALL BE PERMANENTLY POSTED ON OR IN THE ELECTRICAL PANEL BOX</b>		

**AFUE** = Annual fuel utilization efficiency. Standard measurement of efficiency for gas and oil-fired furnaces. *(Minimum Efficiency of 78% Required)*

**COP** = Coefficient of Performance

**EF** = Energy Factor

**SHGC** = Solar Heat Gain Coefficient

**SEER** = Seasonal Energy Efficiency Ratio is a measure of the cooling efficiency of your air conditioner or Heat Pump. *(Minimum 13 SEER Required)*

**HSPF** = Heating Seasonal Performance Factor is a measure of the heating efficiency of a heat pump. *(Minimum 7.7 HSPF Required)*

Table 402.4.2 identifies the items required to be field verified if "**Visual Inspection**" is checked under the Mandatory Requirements (Item #2)

<b>Table 402.4.2</b>		
Air Barrier and Thermal Barrier	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Exterior thermal envelope insulation for framed walls is installed in substantial contact and continuous alignment with building envelope air barrier.
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Breaks or joints in the air barrier are filled or repaired.
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air permeable insulation is not used as a sealing material. -
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air permeable insulation is inside of an air barrier. -
Ceiling/Attic	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air barrier in any dropped ceiling/soffit is substantially aligned with insulation and any gaps are sealed.
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Attic access (except unvented attic), knee wall door, or drop down stair is sealed.
Walls	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Corners and headers are insulated.
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Junction of foundation and sill plate is sealed.
Windows and Doors	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Space between window/door jambs and framing is sealed.
Rim Joists	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Rim Joists are insulated and include an air barrier.
Floors (Including above-garage and cantilevered floors)	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Insulation is installed to maintain permanent contact with underside of subfloor decking. Air barrier is installed at any exposed edge of insulation.
Crawl Space Walls (Closed Crawl Space)	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Insulation is permanently attached to walls.
	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Exposed earth in unvented crawl spaces is covered with a Class I vapor retarder with overlapping joints taped.
Shafts, Penetrations	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Duct shafts, utility penetrations, knee walls and flue shafts opening to exterior or unconditioned space are sealed.
Narrow cavities	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Batts in narrow cavities are cut to fit, or narrow cavities are filled by sprayed/blown insulation.
Garage Separation	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air sealing is provided between the garage and conditioned spaces.
Recessed Lighting	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Recessed light fixtures are air tight, IC rated, and sealed to drywall. <i>Exception: Fixtures in conditioned space.</i>
Plumbing and Wiring	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Insulation is placed between outside and pipes. Batt insulation is cut to fit around wiring and plumbing, or sprayed/blown insulation extends behind piping and wiring.
Shower/Tub on Exterior Wall	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Showers and tubs on exterior walls have insulation and an air barrier separating them from the exterior wall.
Electrical/Phone Box on Exterior Wall	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air barrier extends behind boxes or air sealed type boxes are installed.
Common Wall	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Air barrier is installed in common wall between dwelling units.
HVAC Register Boots	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	HVAC register boots that penetrate building envelope are sealed to subfloor or drywall
Fireplace	<input type="checkbox"/> Complied <input type="checkbox"/> N/A	Fireplace walls include an air barrier.

**Table 402.4.2 is not required to be submitted to the Community Development Department but is to be used as a checklist to field verify the items as noted.**