



Alabama Energy and Residential Codes Manual

Alabama Department of
Economic and Community Affairs

Energy Division

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This document was developed to provide construction professionals with a publishable document detailing the provisions of **Chapter 305-2-4** of the *Administrative Code of Alabama*, known as the **Alabama Energy and Residential Code**, and clarify adoption, enforcement and compliance issues related to this code.

This document should be used in conjunction with the **2009 International Energy Conservation Code®** and the **2009 International Residential Code®**.

This manual is not the law and should not be construed as such. Please refer to Chapter 305-2-4 of the *Alabama Administrative Code* for the law adopting the Alabama Energy and Residential Code.

ALABAMA ENERGY AND RESIDENTIAL CODES

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1. Definitions.

- a) **Alabama Energy and Residential Codes:** The codes adopted by the Alabama Energy and Residential Codes Board and amended by the board.
- b) **Commercial:** For this code, all buildings not included in the definition of “Residential” and not under the authority of the Alabama Building Commission.
- c) **Residential:** The energy provisions of this code include R-3 buildings that are not included in the scope of the International Residential Code, as well as R-2 and R-4 buildings three stories or less in height above grade.
- d) **Farm Structure:** Non-residential structures constructed on a farm for use by the farm.

2. **Commercial Energy Code.** The 2009 International Energy Conservation Code (IECC) shall be implemented and enforced for buildings three stories and above including multi-family dwellings.

3. **Residential Building and Energy Codes.** The 2009 International Residential Code (IRC) as modified below; and sections of the International Energy Conservation Code (IECC) as modified below:

IRC CHAPTER 3 BUILDING PLANNING

SECTION R302 FIRE-RESISTANT CONSTRUCTION.

R302.2 Townhouses.

Exception: A common 2-hour fire resistance-rated wall assembly tested in accordance with ASTM E 119 or UL 263 is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall.

The wall shall be rated for fire exposure from both sides and shall extend to and be tight against exterior walls and the underside of the roof sheathing. Electrical installations shall be installed in accordance with Chapters 34 through 43. Penetrations of electrical outlet boxes shall be in accordance with Section R302.4.

SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS.

R313.1 Design and Installation. Where installed, automatic residential fire sprinkler systems shall be installed in accordance with Section P2904 or NFPA 13D.

IRC CHAPTER 11 ENERGY EFFICIENCY

SECTION N1101 GENERAL

N1101.7.1 Protection of exposed foundation insulation. Section deleted.

N1101.8 Above Code Programs. Above code programs shall be permitted upon approval by the Alabama Residential and Energy Codes Board.

N1101.9 Certificate. A permanent certificate shall be permitted to be posted on or in the electrical distribution panel. If posted, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace and/or baseboard electric heater is installed in the residence, the certificate shall list “gas-fired unvented room heater,” “electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces or electric base board heaters.

SECTION N1102 BUILDING THERMAL ENVELOPE

N1102.1 Insulation and Fenestration Requirements by Component. Delete and substitute **Table 402.1.1 Insulation and Fenestration Requirements by Component** from the 2009 IECC.

N1102.2.8 Slab-on-grade floors. Section deleted.

**TABLE 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT ^a**

CLIMATE ZONE	FENESTRATION U-FACTOR ^b	SKY-LIGHT U-FACTOR ^b	GLAZED FENESTRATION SHGC ^{b,e}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE ⁱ	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^c WALL R-VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65 ^j	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50 ^j	0.65	0.30	30	13	5/8	19	5/13 ^f	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5 ^h	13/17	30 ^g	10/13	10, 2ft	10/13
6	0.35	0.60	NR	49	20 or 13+5 ^h	15/19	30 ^g	15/19	10, 4ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	38 ^g	15/19	10, 4ft	10/13

For SI: 1 foot = 304.8 mm.

- a. *R*-values are minimums. *U*-factors and SHGC are maximums. R-19 batts compressed into a nominal 2 x 6 framing cavity such that the *R*-value is reduced by R-1 or more shall be marked with the compressed batt *R*-value in addition to the full thickness *R*-value.
- b. The fenestration *U*-factor column excludes skylights. The SHGC column applies to all glazed fenestration.
- c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulated sheathing on the interior or exterior of the home. "10/13" means R-10 continuous insulated sheathing on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
- d. R-5 shall be added to the required slab edge *R*-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.
- e. There are no SHGC requirements in the Marine Zone.
- f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.
- g. Or insulation sufficient to fill the framing cavity, R-19 minimum.
- h. "13+5" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is used. If structural sheathing covers more than 25 percent of the exterior, structural sheathing shall be supplemented with insulated sheathing of at least R-2.
- i. The second *R*-value applies when more than half the insulation is on the interior of the mass wall.
- j. For impact rated fenestration complying with Section R301.2.1.2 of the *International Residential Code* or Section 1608.1.2 of the *International Building Code*, the maximum *U*-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

SECTION N1103 SYSTEMS

N1103.1.1 Programmable Thermostats. Section deleted.

N1103.2.1 Insulation. All ducts not in a conditioned space shall be insulated to a minimum of R-6. Effective July 1, 2013 all supply ductwork in attics shall be insulated to a minimum of R-8.

Exception: Ducts or portions thereof located completely inside the building thermal envelope.

IRC CHAPTER 15 EXHAUST SYSTEMS.

SECTION M1502 CLOTHES DRYER EXHAUST

M1502.4.4.1 Specified length. The maximum length of the exhaust duct shall be 35 feet (10,668mm) from the connection to the terminus of the transition duct from the dryer to the outlet terminal. Where fittings are utilized, the maximum length of the exhaust duct shall be reduced in accordance with Table M1502.4.4.1.

IRC CHAPTER 16 DUCT SYSTEMS.

SECTION M1601 DUCT CONSTRUCTION

M1601.4.1 Joints and seams. Joints of duct systems shall be made substantially airtight by means of tapes, mastics, liquid sealants, gasketing or other approved closure systems. Closure systems used with rigid fibrous glass ducts shall comply with UL181A and shall be marked 181A-P for pressure-sensitive tape, 181A-M for mastic or 181A-H for heat-sensitive tape. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked 181B-FX for pressure-sensitive tape or 181B-M for mastic. All metal to metal connections shall be mechanically fastened. All duct connections shall be sealed. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL181B and shall be marked 181B-C. Crimp joints for round metal ducts shall have a contact lap of at least 11/2 inches (38 mm) and shall be mechanically fastened by means of at least three sheet-metal screws or rivets equally spaced around the joint. Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer's installation instructions.

NEW SECTION. M1601.4.1.1 Duct leakage. Duct leakage testing shall not be required prior to July 1, 2013. Leakage of ducts to unconditioned space shall be less than or equal to 8 cfm (226.5 L/min) per 100 ft² (9.29 m²) of conditioned floor area or a total leakage less than or equal to 12 cfm (12 L/min) per 100 ft² (9.29m²) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure.

Exception: Duct tightness test is not required if the air handler and all ducts are located within conditioned space.

IRC CHAPTER 24 FUEL GAS.

SECTION G2418 (407) PIPING SUPPORT

G2418.2 (407.2) Design and installation. Piping shall be supported with metal pipe hooks, pipe straps, bands, brackets, hangers, building structural components, or other approved methods suitable for the size of piping, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. Piping shall be anchored to prevent undue strains on connected equipment and/or appliances and shall not be supported by other piping. Manufactured pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section G2424. Supports, hangers, and anchors shall be installed so as not to interfere with the free expansion and contraction of the piping between anchors. All parts of the supporting equipment shall be designed and installed so they will not be disengaged by movement of the supported piping.

Part VIII-Electrical

IRC CHAPTER 34 GENERAL REQUIREMENTS

SECTION E3401 GENERAL

E3401.1 Applicability. Electrical installations in compliance with the 2008 National Electrical Code® (NEC®) (National Fire Protection Association [NFPA 70-2008]) or later editions shall be permitted.

Additional energy provisions from the 2009 International Energy Conservation Code as modified below:

2009 INTERNATIONAL ENERGY CONSERVATION CODE

IECC Chapter 4 RESIDENTIAL ENERGY EFFICIENCY

401.3 Certificate. A permanent certificate shall be permitted to be posted on or in the electrical distribution panel. If posted, the certificate shall not cover or obstruct the visibility of the circuit directory label, service disconnect label or other required labels. The certificate shall be completed by the builder or registered design professional. The certificate shall list the predominant R-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces; U-factors for fenestration; and the solar heat gain coefficient (SHGC) of fenestration. Where there is more than one value for each component, the certificate shall list the value covering the largest area. The certificate shall list the types and efficiencies of heating, cooling and service water heating equipment. Where a gas-fired unvented room heater, electric furnace and/or baseboard electric heater is installed in the residence, the certificate shall list “gas-fired unvented room heater,” “electric furnace” or “baseboard electric heater,” as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces or electric base board heaters.

401.4 Above Code Programs. Above code programs shall be permitted upon approval by the Alabama Residential and Energy Codes Board.

402.2.8 Slab-on-grade floors. Section deleted.

403.1.1 Programmable thermostat. Section deleted.

403.2.1 Insulation. All ducts not in a conditioned space shall be insulated to a minimum of R-6. Effective July 1, 2013 all supply ductwork in attics shall be insulated to a minimum of R-8.

403.2.2 Sealing (Mandatory) All ducts, air handlers, filter boxes and building cavities used as ducts shall be sealed. Joints and seams shall comply with Section M1601.4.1 of the *International Residential Code*.

Effective July 1, 2013, duct tightness shall be verified by either of the following:

- 1) Post-construction test: Leakage to outdoors shall be less than or equal to 8 cfm per 100 ft² of conditioned floor area or total leakage less than or equal to 12 cfm per 100 ft² of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25Pa) across the entire system, including the manufacturer’s air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
- 2) Rough-in test: Total leakage shall be less than or equal to 6 cfm per 100 ft² of conditioned floor area when tested at a pressure differential of 0.1 inches w.g.

(25Pa) across the roughed in system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 4 cfm per 100 ft² of conditioned floor area.

Exceptions: Duct tightness test is not required if the air handler and all ducts are located within conditioned space.

403.9 Pools (Mandatory). Section deleted.

403.9.1 Pool Heaters. Section deleted.

403.9.2 Time Switches. Section deleted.

403.9.3 Pool Covers. Section deleted

IECC CHAPTER 5 COMMERCIAL ENERGY EFFICIENCY

504.7.1 Pool Heaters. Pool heaters shall comply with ICC Fuel Gas Code or National Fire Protection Association (NFPA) 58 as appropriate, and with the National Electric Code (NEC).

4. Authority of the Alabama Energy and Residential Codes Board.

The Residential Energy Codes Board of Alabama was originally created under the Alabama Department of Economic and Community Affairs' area of responsibility. Governor Fob James signed Act 95-537 creating the Board for the purpose of promoting and overseeing the implementation of the Model Energy Code by encouraging the conservation and efficient use of residential energy resources within this state's local jurisdictions; encouraging and promoting the acceptance, adoption and implementation of residential model energy codes; advising and assisting local governments in adopting and implementing those model energy codes and identifying and promoting energy management technologies. In 2010 Governor Bob Riley signed Act 2010-185 increasing the representation of Board members and renaming the Board the Alabama Energy and Residential Codes Board (Board), and expanding the Board's authority with respect to all matters pertaining to the acceptance, adoption and implementation of commercial and residential energy codes and residential building codes by municipal and county governments in the state. These acts as amended are codified in Title 41, Chapter 23, Article 5 of the Code of Alabama, 1975.

5. Compliance with the Alabama Energy and Residential Code.

a) Residential and Commercial Energy Codes

Energy provisions of the Alabama Energy and Residential Code (AERC) are mandatory for all jurisdictions statewide and cannot be amended without prior approval of the AERC Board.

b) Residential Building Codes

Jurisdictions that did not have a residential building code in effect on March 9, 2010 must begin enforcing the AERC by October 1, 2012.

Jurisdictions that already had a code in effect may continue to enforce that code. However, if they choose to update their code, they must adopt the AERC.

No jurisdiction can mandate residential fire sprinklers with the exception of municipalities that had adopted and were enforcing that provision prior to March 9, 2010.

Jurisdictions can amend the AERC as local conditions require.

6. Petition for Adoption or Amendment of Code.

Any person who wishes to petition the Alabama Energy and Residential Codes Board to adopt, amend, or repeal any code shall submit said petition to the Energy Division of the Alabama Department of Economic and Community Affairs, P.O. Box 5690, Montgomery, Alabama 36103-5690 in the following form:

PETITION FOR ADOPTION OR AMENDMENT OF CODE(S)

1. Petitioner

Name: _____

Jurisdiction: (If applicable) _____

Address: _____

Phone: _____

2. Character of Change

I propose that the Alabama Energy and Residential Codes Board:

- A. () Adopt the following new code.
- B. () Amend Code _____ as follows.
- C. () Repeal Code _____ In total.

3. Text of Proposed Code

- If you checked box "A" above, provide a typed copy of the code you propose.
- If you checked box "B" above, provide a typed copy of the existing code, adding any proposed language. Proposed new language should be underlined and proposed deletions should be stricken through.
- If you checked box "C" above, skip this and go to Part 4.

4. Purpose of Change

Briefly describe what the effect of this change will be, and why you believe the change should be made. Show the financial impact this change will have upon the public, how the impact figures were determined and the advantages and/or disadvantages of the proposed change and what effects the proposed change would have on existing energy, life, health or safety codes.

5. Signature

Petitioner

Date

The Board shall consider the petition, and shall within ninety (90) days after review of the petition, either deny the petition in writing on the merits, stating its reasons for the denial, or initiate rule-making proceedings in accordance with, Code of Alabama, 1975, Section 41-22-5.



ALABAMA DEPARTMENT OF ECONOMIC AND COMMUNITY AFFAIRS

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