Ordinance Number O-2018-02

AN ORDINANCE PROVIDING MINIMUM ENERGY STANDARDS FOR THE DESIGN OF NEW BUILDINGS AND STRUCTURES OR PORTIONS AND ADDITIONS TO EXISTING BUILDINGS THAT PROVIDE FACILITIES OR SHELTER FOR PUBLIC ASSEMBLY, EDUCATION, BUSINESS, MERCANTILE, INSTITUTIONAL, STORAGE AND RESIDENTIAL OCCUPANCIES, AS WELL AS THOSE PORTIONS OF FACTORY AND INDUSTRIAL OCCUPANCIES DESIGNED PRIMARILY FOR HUMAN OCCUPANCY BY REGULATING THEIR HVAC, SERVICE WATER HEATING, ELECTRICAL DISTRIBUTION AND ILLUMINATING SYSTEMS AND EQUIPMENT FOR EFFECTIVE USE OF ENERGY.

Be it enacted by the City Council of the City of Ward, Arkansas,

Section 1. ADOPTION OF ENERGY CODE.

There is hereby adopted by the City Council of the City of Ward, Arkansas, for the purpose of establishing rules and regulations for energy efficient standards for new building construction, this Code known as the 2014 Arkansas Energy Code, being particularly the 2014 Arkansas Energy Code edition thereof and the whole thereof, save and except such portions as are hereinafter deleted, modified, or amended, of which not less than three (3) copies of this ordinance, as well as, three (3) copies of the 2014 Arkansas Energy Code, have been and now are filed in the office of the City Clerk of the City of Ward, Arkansas, and the same ordinance is hereby adopted and incorporated as fully as if set out a length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling in the construction of all buildings and structures therein contained within the corporate limits of the City of Ward, Arkansas.

Section 2. INCONSISTENT ORDINANCE REPEALED.

Ordinance or parts thereof in force at the time that this ordinance shall take effect, if inconsistent herewith, are hereby repealed.

Section 3. EMERGENCY CLAUSE

Whereas it is of the utmost urgency that the City of Ward, Arkansas, have an up to date Energy Code to protect the citizens of our city, therefore, an Emergency is hereby declared to exist and this ordinance being necessary for the immediate protection of the public shall take effect immediately on its passage and approval.

Date: June 11, 2018
Approved: Mayor Art Brooke

Attest: City Clerk John Barclay

City Seal
Arkansas Energy Code for New Building Construction Supplements and Amendments

2014

ARKANSAS Economic Development Commission
ENERGY OFFICE

Arkansas Economic Development Commission – Energy Office
900 West Capitol Avenue
Little Rock, Arkansas 72113
501-682-6103
www.arkansasenergy.org
Introduction

The Arkansas General Assembly authorized the Arkansas Economic Development Commission - Energy Office to promulgate these regulations in Section 3(B)(2)(c) of Act 7 of 1981. These rules and regulations are in adherence with the Administrative Procedures Act. The 2014 Arkansas Energy Code for New Building Construction establishes minimum energy requirements for residential and commercial buildings in the State of Arkansas.

Residential and Commercial


To order copies of the International Energy Conservation Code 2009 Edition contact:

International Code Council
900 Montclair Road
Birmingham, Alabama 35213-1206
Phone: 1-800-786-4452, Fax: 205-591-0775
Telecommunications Device for the Deaf: 205-599-9742
Copyright © 1996-1998 Southern Building Code Congress International, Inc. All rights reserved.
Web: www.iccsafe.org

Commercial


To order copies of American Society of Heating, Refrigerating, and Air-Conditioning Engineers ANSI/ASHRAE/IESNA Standard 90.1-2007 contact:

American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc.
1791 Tullie Circle, N.E.
Atlanta, Georgia 30329
Phone: 404-636-8400, Fax: 404-321-5478
Web: www.ashrae.org

Questions, inquiries or request for copies of the 2014 Arkansas Energy Code for New Building Construction Supplements and Amendments may be addressed to:

Arkansas Economic Development Commission - Energy Office
900 West Capitol Avenue
Little Rock, Arkansas 72201
Phone: 800-558-2633 or 501-682-6103, Fax: 501-682-7499
Email: EnergyInfo@ArkansasEDC.com
Arkansas Amendments

*Revise the International Energy Conservation Code, 2009 Edition, as follows:

Chapter 1 Administration

CHAPTER 1
ADMINISTRATION

SECTION 101.1
SCOPE AND GENERAL REQUIREMENTS

*Delete ‘Title’ and replace with the following:

101.1 Title. This Code shall be known as the 2014 Arkansas Energy Code for New Building Construction and shall be cited as such. It is referred to herein as “this Code” or “the Arkansas Energy Code.”

*Revise 101.5.1 ‘Compliance materials’ to read as follows:

101.5.2 Compliance materials. Compliance pathways for residential and commercial construction are those delineated in Chapter 4 and Chapter 5 respectively. Computer aided tools such as REScheck, RESNET Home Energy Rating System and COMcheck are also acceptable. Other tools and third-party services may be approved by the Arkansas Economic Development Commission – Energy Office.

A label as outlined in 401.3 is required to be posted on new residential construction.

REScheck and COMcheck are computer programs developed by Pacific Northwest National Laboratories for the U.S. Department of Energy (D.O.E.) to assist in demonstration of compliance with the IECC. They may be obtained free of charge from the D.O.E. online at www.energycodes.gov. When following the REScheck compliance pathway, select the appropriate version.

*Revise 101.5.2 “Low energy buildings’ to add the following to the list of exempt buildings:

3. Temporary use structures such as hunting and fishing camps, boat houses, remote cabins, etc. that do not meet the definition of “dwelling units” in Section 202; General Definitions.

4. Mobile homes and manufactured housing.
SECTION 111
Adoption

*Add Section 111 ‘Adoption’ as follows:

111.1 Adoption. Arkansas Code § 15-10-205(b)(3)(B) requires that any city or county in Arkansas which issues building permits for new building construction (referred to herein as “applicable cities or counties”) shall adopt the Arkansas Energy Code as amended.

111.1.1 Date of adoption: Applicable cities or counties shall adopt the Arkansas Energy Code prior to 12/31/2014.

111.1.2 Acknowledgement of Adoption. Upon adoption of the Arkansas Energy Code, applicable cities or counties are required to submit a copy of the adoption ordinance to the Arkansas Economic Development Commission - Energy Office. If the applicable city or county has not adopted the Arkansas Energy Code by 12/31/2014 the mayor and/or county judge is required to submit a letter to the Arkansas Economic Development Commission - Energy Office, no later than 60 days after this deadline, describing why the city or county is not in compliance with Arkansas Code § 15-10-205(b)(3)(B).

SECTION 112
EFFECTIVE DATE

*Add Section 112 ‘Effective Date’ as follows:

112.1 The effective date for this Code shall be is 1/1/2015.
*Replace Figure 301.1 with the following:

Figure 301.1 Arkansas Climate Zones

*Revise Table 301.1 to include on Arkansas-specific information as follows:

<table>
<thead>
<tr>
<th>TABLE 301.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY</td>
</tr>
</tbody>
</table>

**Climate Zone 4** contains counties of Baxter, Benton, Boone, Carroll, Fulton, Izard, Madison, Marion, Newton, Search, Stone and Washington.

**Climate Zone 3** contains counties of Arkansas, Ashley, Bradley, Calhoun, Chicot, Clark, Clay, Cleburne, Cleveland, Columbia, Conway, Craighead, Crawford, Crittenden, Drenss, Dallas, Desha, Drew, Faulkner, Franklin, Garland, Grant, Greene, Hempstead, Hot Spring, Howard, Independence, Jackson, Jefferson, Johnson, Lafayette, Lawrence, Lee, Lincoln, Little River, Logan, Lonoke, Miller, Mississippi, Monroe, Montgomery, Nevada, Ouachita, Perry, Phillips, Pike, Poinsett, Polk, Pope, Prairie, Pulaski, Randolph, Saline, Scott, Sebaskian, Sevier, Sharp, St. Francis, Union, Van Buren, White, Woodruff and Yell.
SECTION 402
BUILDING THERMAL ENVELOPE

*Revise Table 402.1.1, ‘INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT’ as follows:

Revise values for Climate Zone 4 with the values below.

<table>
<thead>
<tr>
<th>CLIMATE ZONE</th>
<th>FENSTRATION U-FACTOR</th>
<th>SKYLIGHT U-FACTOR</th>
<th>SKYLIGHT GLAZED FENESTRATION SHGC</th>
<th>CEILING R-VALUE</th>
<th>WOOD FRAME WALL R-VALUE</th>
<th>MASS WALL R-VALUE</th>
<th>FLOOR R-VALUE</th>
<th>BASEMENT WALL R-VALUE</th>
<th>SLAB R-VALUE &amp; DEPTH</th>
<th>CRAWL SPACE WALL R-VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 except Marine</td>
<td>.50</td>
<td>.65</td>
<td>.30</td>
<td>30</td>
<td>13</td>
<td>5/10</td>
<td>19</td>
<td>10/13</td>
<td>0</td>
<td>5/13</td>
</tr>
</tbody>
</table>

SECTION 403
SYSTEMS

*Delete Section 403.1.1, ‘Programmable thermostat.’

*Add new Section 403.2.1.1 ‘Spray foam insulation.’
403.2.1.1 Spray foam insulation. Spray application of polyurethane foam to the exterior of ducts in attics and crawl spaces shall be permitted subject to all of the following:

1. The flame spread index is not greater than 25 and the smoke-developed index is not greater than 450 at the specified installed thickness.
2. The foam plastic is protected in accordance with the ignition barrier requirements.
3. The foam plastic complies with the requirements of Section R316.
4. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C). Coverings and linings shall be listed and labeled.
5. External duct insulation and factory-insulated flexible ducts shall be legibly printed or identified at intervals not longer than 36 inches (914 mm) with the name of the manufacturer, the thermal resistance R-value at the specified installed thickness and the flame spread and smoke-developed indexes of the composite materials. Spray polyurethane foam manufacturers shall provide the same product information and properties, at the nominal installed thickness, to the customer in writing at the time of foam application. All duct insulation product R-values shall be based on insulation only, excluding air films, vapor retarders or other duct components, and shall be based on tested C-values at 75°F (24°C) mean temperature at the installed thickness, in accordance with recognized industry procedures. The installed thickness of duct insulation used to determine its R-value shall be determined as follows:
6. For duct board, duct liner and factory-made rigid ducts not normally subjected to compression, the nominal insulation thickness shall be used.
7. For ductwrap, the installed thickness shall be assumed to be 75 percent (25-percent compression) of nominal thickness.
8. For factory-made flexible air ducts, the installed thickness shall be determined by dividing the difference between the actual outside diameter and nominal inside diameter by two.
403.2.3 Building cavities (Mandatory). Building framing cavities shall not be used as supply or return ducts. All supply and return ducts must be lined with metal, ductboard or other material approved in AMC 603.

*Add new Section 403.2.4, ‘Joints and seams’, to read as follows:

403.2.4 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. Without exception all closure systems shall have mastic applied that is at least 0.08 inches (2 mm) thick. Closure systems used with rigid fibrous glass ducts shall comply with UL181A and shall be marked 181A-P for pressure-sensitive tape used with mastic, 181A-M for only mastic or 181 AH for heat-sensitive tape used with mastic. Closure systems used with flexible air ducts and flexible air connectors shall comply with UL181B and shall be marked 181B-FX for pressure sensitive tape used with mastic or 181B-M for only mastic. Duct connections to flanges of air distribution system equipment or sheet metal fittings shall use mastic and be mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B at least 1-1/2 inches (38 mm) and shall use mastic and 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.

Exceptions:

1. Application of spray polyurethane foam insulation and mastic shall be permitted without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect. Mastic must be applied on all accessible sides.
3. Continuously welded or locking type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500Pa) pressure classification shall not require additional closure systems.

*Delete Section 404.1, ‘Lighting equipment (Prescriptive)’
**CHAPTER 6**  
**REFERENCED STANDARDS**

*Revise Chapter 6 ‘Referenced Standards’ to include the following:

<table>
<thead>
<tr>
<th>Standard reference number</th>
<th>Title</th>
<th>Referenced in Code section number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFC</td>
<td>Arkansas Fire Prevention Code</td>
<td>103.6</td>
</tr>
<tr>
<td></td>
<td>State Fire Marshal’s Office</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 State Police Plaza Drive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Little Rock, Arkansas 72209</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(501) 618-8523</td>
<td></td>
</tr>
</tbody>
</table>

| AMC                       | Arkansas Mechanical Code           | 503.2.5, 503.2.5.1, 503.2.6, 503.2.7, 503.2.7.1, 503.2.7.1.1, 503.2.7.1.2, 503.2.9.1, 503.1 and 503.4.5 |
|                           | Department of Health               |                                   |
|                           | Division of Protective Health Codes|                                   |
|                           | 4815 West Markham Street, Slot 24 |                                   |
|                           | Little Rock, Arkansas 72205-3867   |                                   |
|                           | (501) 661-2642                     |                                   |
APPENDIX A: SAMPLE ORDINANCE

ORDINANCE NO. _______

AN ORDINANCE PROVIDING MINIMUM ENERGY STANDARDS FOR THE DESIGN OF NEW BUILDINGS AND STRUCTURES OR PORTIONS AND ADDITIONS TO EXISTING BUILDINGS THAT PROVIDE FACILITIES OR SHELTER FOR PUBLIC ASSEMBLY, EDUCATION, BUSINESS, MERCANTILE, INSTITUTIONAL, STORAGE, AND RESIDENTIAL OCCUPANCIES, AS WELL AS THOSE PORTIONS OF FACTORY AND INDUSTRIAL OCCUPANCIES DESIGNED PRIMARILY FOR HUMAN OCCUPANCY BY REGULATING THEIR EXTERIOR ENVELOPES AND THE SELECTION OF THEIR HVAC, SERVICE WATER HEATING, ELECTRICAL DISTRIBUTION, AND ILLUMINATING SYSTEMS AND EQUIPMENT FOR EFFECTIVE USE OF ENERGY.

Be in enacted by the City Council of ________________, Arkansas,

Section 1. ADOPTION OF ENERGY CODE.

There is hereby adopted by the City Council of ________________, Arkansas, for the purpose of establishing rules and regulations for energy efficient standards for new building construction, this Code known as the 2014 Arkansas Energy Code, being particularly the 2014 Arkansas Energy Code edition thereof and the whole thereof, save and except such portions as are hereinafter deleted, modified, or amended, of which not less than three (3) copies of this ordinance, as well as, three (3) copies of the 2014 Arkansas Energy Code, have been and now are filed in the office of the Clerk or Recorder of the city of ________________, Arkansas, and the same ordinance is hereby adopted and incorporated as fully as if set out at length herein, and from the date on which this ordinance shall take effect, the provisions thereof shall be controlling in the construction of all buildings and structures therein contained within the corporate limits of the City of ________________, Arkansas.

Section 2. INCONSISTENT ORDINANCES REPEALED.

Ordinances or parts thereof in force at the time that this ordinance shall take effect, if inconsistent herewith, are hereby repealed.

Section 3. EMERGENCY CLAUSE.

Whereas it is of the utmost urgency that the city of ________________, Arkansas, have an up-to-date Energy Code to protect the citizens of our city, therefore, an Emergency is hereby declared to exist and this ordinance being necessary for the immediate protection of the public shall take effect immediately on its passage and approval.

Signed: ___________________________

Mayor
(SEAL)

Attest: ___________________________
City Clerk or Recorder
Date Passed: _____________________

Air sealing key points

1. Seal air tight IC-rated recessed light fixtures to drywall.
2. Pan vented through exterior wall sealed at penetration.
3. Insulate and install sheet material behind bathtub.
4. Insulate exterior wall.
5. Insulate headers.
6. Insulate corner.
7. Namour stud cavity batts are cut to fit.
8. Caulk.
9. Electrical panel box, recommend install on interior non-insulated wall. If installed on exterior wall, air barrier shall extend behind box or air-sealed box shall be installed.
10. Seal gap between electrical box and drywall.
11. Seat wiring and plumbing penetrations.
12. Seat plumbing penetrations (if ceiling is insulated).
13. Insulate and install sheet material behind bathtub.
Air sealing key points continued

Window rough opening

Use basket rod or spray beam (appropriate for window) to fill gaps between window door and rough opening

Wall cross-section

1. Glue drywall to top and bottom plates (recommended)
2. Caulk bottom plate to subfloor
3. Caulk band past to subfloor and plates
4. Glue drywall to top plate (recommended)
5. Tape or caulk exterior sheathing seams
6. Install interior water moisture barrier up to 3" IRC 702.2
7. Seal CLASS I vapor retarder required in cornices

Exclusion: This document is intended solely to help professional interpreters to understand and analyze the 2014 Arkansas Energy Code for new building construction supplements and amendments. It is not intended to be exhaustive and does not define or establish construction practices or techniques. Other codes, standards, and practices may apply in certain circumstances.
Air sealing key points continued

Install blocking and rafter baffle to prevent wind-washing if vented, insulated roofline (required)

Sealed attic-side air barrier (required)—OSB, insulated sheathing, etc.

Blocking - fit in joist cavity. caulked or foamed

Attic knee-walls

Rigid insulation (recommended)
Weather-strip door opening and threshold

Caulk and seal rough opening

Two-level attic

Unconditioned Space
Air barrier required. (rigid insulation board recommended)

Caulk
Glue
Blocking
Conditioned space

Disclaimer:
This document is intended solely to help graphically demonstrate the air leakage provisions of Section 402.4 of the 2016 IRC. It does not cover all sealing locations or techniques. Other code provisions may be applicable as well.
Air sealing key points continued

Air barrier behind steps

Garage (unconditioned)

10

Garage to house door

Web trusses

Rigid foam (recommend covering with ignition barrier, if required)

Basement (conditioned)

Inset garage to house door

Graze (unconditioned)

Web truss

Air seal

1

Sheath and double

Rigid foam (recommend covering with ignition barrier, if required)

Basement (conditioned)

Disclaimer:
The material is intended solely to help geographically document air leakage problems, as outlined in section 402.3 of the 2014 ICC. It does not cover all air sealing techniques or practices. Other code provisions may be applicable as well.

2014 Arkansas Energy Code for new Building Construction Supplements and Amendments

Page 25 of 30
Air sealing key points continued

Multifamily

Seal gap between levels
Cavity insulation plus exterior sheathing
Seal penetrations through exterior sheathing
Seal gap between levels

Recommend rigid foam between concrete masonry units and framed stud wall
Steel framing requirements
- R-6 foam required if steel studs
- R-7.3 if greater than 3 stories

Seal gap between concrete wall and framed units at each level

Disclaimer:
This document is intended solely to help graphically demonstrate the air leakage provisions of Section 620.1 of the 2009 IESC. It does not cover all air leakages locations or techniques.
Other code provisions may be applicable as well.
Insulation Details for Ceilings with Attic spaces

Rafter and Truss

Standard Truss with tapered insulation depth

Energy Truss with full height insulation (recommended)

Standard rafter and top plate with tapered insulation depth

Rafter on raised top plate with full height insulation (recommended)

Note: Wind wash baffle and air-permeable insulation dam. For air permeable insulation in vented attics, baffles shall be installed adjacent to soffit and eave vents. A minimum of a 1-inch space shall be provided between the insulation and the roof sheathing and at the location of the vent. The baffle shall extend over the top of the insulation inward until it is at least 4 inches vertically above the top of the insulation. Any solid material such as cardboard or thin insulating sheathing shall be permissible as the baffle.

Disclaimer:
This document is intended only to help graphically demonstrate the air leakage principles of sections 402.4 of the 2009 IECC. It does not cover all air sealing techniques or practices. Other code provisions may be applicable as well.