DRAFT Mark-up

Supplements and Amendments to the ~~2004~~ Arkansas Energy Code for New Building Construction

~~October 1, 2004~~ 2011

Arkansas Energy Office
Arkansas ~~Department of~~ Economic Development Commission

Introduction

The Arkansas General Assembly authorized the Arkansas 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~~, are effective October 1, 2004~~.

For residential structures, Arkansas adopts the International Energy Conservation Code (IECC), 2003 Edition, published and copyrighted by the International Codes Council ~~and the Southern Building Code Congress International, Inc. When the IECC 2003 Edition is used in conjunction with the *Arkansas Supplements and Amendments to the 2003 International Energy Conservation Code*, this shall constitute the official *2004 Arkansas Energy Code for New Building Construction.*~~
The residential portion of the *Arkansas Energy Code for New Building Construction* is composed of the 2003 Edition of the International Energy Conservation Code (2003 IECC) combined with these *Supplements and Amendments.*

Chapters 2 through 6 of the IECC 2003 provide regulations for residential construction. To order copies of the *International Energy Conservation Code, 2003 Edition ~~with Arkansas Supplements and Amendments~~* 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

For commercial structures, the ~~2003 International Energy Conservation Code~~ Arkansas Energy Code for New Building Construction adopts by reference the *American Society of Heating, Refrigerating, and Air Conditioning Engineers* (ASHRAE) *ANSI / ASHRAE /IESNA Standard 90.1-~~2001~~2007 Energy Standard for Buildings Except Low-Rise Residential Buildings*, and as an alternative, Chapter 5 of the *2009 International Energy Conservation Code* with its associated definitions, general requirements and referenced standards. This is available from the International Code Council at the above address.

~~The *American Society of Heating, Refrigerating, and Air-Conditioning Engineers ANSI/ASHRAE/IESNA Standard 90.1-2001* is available for viewing only, without charge, on the ASHRAE website: http://www.ashrae.org/template/AssetDetail/assetid/16730.~~

To order copies of *American Society of Heating, Refrigerating, and Air-Conditioning Engineers ANSI/ASHRAE/IESNA Standard 90.1-~~2001~~ 2007* contact:

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

Questions, inquiries or request for copies of the ~~*2004*~~ *Arkansas Energy Code for New Building Construction Supplements and Amendments~~, which includes the *Arkansas Supplements and Amendments to the 2003 International Energy Conservation Code*,~~ may be addressed to:

Arkansas Energy Office
Attn: ~~*2004*~~ *Arkansas Energy Code for New Building Construction*
~~One State~~ 900 West Capitol ~~Mall~~
Little Rock, AR 72201
Phone: 800-558-2633 or 501-682-6103, Fax: 501-682-~~2703~~ 7499
Email: ~~energy@1-800-ARKANSASArkansasEDC.com~~ EnergyInfo@ArkansasEDC.com
Download code information and compliance tools at: ~~www.1800arkansas.com/energy/energycode~~ www.ArkansasEnergy.org Click on the Residential tab on top, then Builders and Energy Code on the left side.

2004 Arkansas Energy Code for New Building Construction

Arkansas Supplements and Amendments to the 2003 International Energy Conservation Code

Arkansas Energy Office
Arkansas Department of Economic Development
One Capitol Mall
Little Rock, AR 72201
(501) 682-1370
www.1800arkansas.com/energy/energycode

Effective October 1, 2004

~~FORWARD~~

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~~Arkansas Energy Office~~
~~Attn: *2004 Arkansas Energy Code for New Building Construction*~~
~~One State 900 West Capitol Mall~~
~~Little Rock, AR 72201~~
~~Phone: 800-558-2633 or 501-682-6103~~
~~Fax: 501-682-2703 7499~~
~~Email: energy@1-800-ARKANSASArkansasEDC.com~~
~~Download code information and compliance tools at: www.1800arkansas.com/energy/energycode~~

OVERVIEW

This document supplements and amends the *International Energy Conservation Code (IECC), 2003 Edition*. In cases where there are differences between these "Supplements and Amendments" and the IECC 2003 Edition, or with *ANSI/ASHRAE/IESNA Standard 90.1-~~2001~~ 2007*, these "Supplements and Amendments" shall take precedence.

Each of the following Chapters of this document associates directly with the corresponding chapters of the IECC 2003 unless otherwise noted.

RESIDENTIAL

- **Chapter 1.** Administration – Deleted. Replaced with the *~~2004~~ Arkansas Energy Code for New Building Construction Supplements and Amendments, Chapter 1, Administration and Enforcement*.
- **Chapter 2**: **Definitions**.
- **Chapter 3**: **Design Conditions**. Establishes the design criteria for the entire state of Arkansas and defines Arkansas' four residential climate zones. The climate zones establish the design conditions for use with Chapters 4, 5, and 6 ~~and 8~~.

  This chapter has been modified to include a map of Arkansas with a list of counties and their associated residential climate zones, and a table identifying the Heating Degree Day (HDD) ranges associated with each zone.
- **Chapter 4**: Pertains to **residential building design by systems analysis**, as well as the use of renewable resources such as wind, solar, geothermal, etc.

  Section 402.2.3.1.3 has been deleted which required windows to have a 0.40 Solar Heat Gain Coefficient (SHGC) in homes located in areas experiencing less than 3,500 HDD.
- **Chapter 5**: **Residential compliance by designed component[1] performance**—this analyzes the total building for compliance one component at a time. Assuming each individual component of the building meets the thermal requirements of the code then the entire building is deemed to comply. This chapter offers the use of "trade-offs" to achieve compliance by allowing the builder to substitute or "trade-off" values between building components. A properly executed use of an Arkansas Energy Office approved compliance tool may be used to validate any trade-off.

  Section 502.1.5 has been deleted which required the 0.40 SHGC. The *R*-values in the Minimum Duct Insulation **Table 503.3.3.3** have been changed. Also **footnote "b"** under that same table has been deleted which stated that insulation on return ducts located in a basement is not required. All references to the *International Mechanical Code* have been changed to the *Arkansas Mechanical Code*.
- **Chapter 6**: Offers **residential prescriptive compliance** via the single step compliance method by selecting an option directly from the charts in the applicable climate zone. The values from the option show the minimum requirements for each component of a residential structure for the specific climate zone. An approved Arkansas Energy Office prescripive compliance tool may be used to validate code compliance.

  Section 602.2 has been deleted which required the 0.40 SHGC.

COMMERCIAL

- **Chapter 7**: Pertains to **building design for commercial buildings**, except those that comply with Chapter ~~8~~ 5 of the 2009 IECC. *ANSI/ASHRAE/IESNA Standard 90.1 ~~2001~~ 2007* is adopted by reference. An approved Arkansas Energy Office compliance tool may be used to validate compliance.

- **Chapter 8**: Chapter 8 of the 2003 IECC is removed in its entirity and replaced with Chapter 5 of the 2009 International Energy Conservation Code (2009 IECC) with its associated definitions, general requirements and referenced standards. ~~Pertains to design by **acceptable practice for commercial buildings.**~~ All references to the *International Mechanical Code* have been changed to the *Arkansas Mechanical Code*. An approved Arkansas Energy Office compliance tool may be used to validate compliance.

[1] The word "component" for the purposes of this code is defined as being a particular segment of a building such as a wall, ceiling, or floor. Hence, the terms *wall component* or *ceiling component*.

SUMMARY

Chapters 4, 5 and 6 of the 2003 IECC offer different methods to achieve code compliance for low-rise residential construction. ~~, and~~ For commercial and high-rise residential construction Chapter~~s~~ 7 references ASHRAE 90.1-2007 and Chapter 8 ~~offer different methods to achieve code compliance~~ is removed and replaced with Chapter 5 of the 2009 IECC ~~for commercial and high-rise residential construction~~.

These amendments have ~~four~~ five significant changes:

1) Chapter 1 - Administration~~, of the IECC 2003~~ was deleted and replaced with the ~~*2004*~~ *Arkansas Energy Code for New Building Construction Supplements and Amendments, Chapter 1, Administration and Enforcement*.
2) The requirement of a 0.4 Solar Heat Gain Coefficient in Chapters 4, 5 and 6 was deleted.
3) The residential duct insulation requirement was changed.
4) *ANSI/ASHRAE/IESNA 90.1-~~2001~~ 2007* is referenced for commercial buildings and high-rise residential buildings in Chapters 7 ~~and 8~~.
5) Chapter 8 of the IECC 2003 is deleted and replaced with Chapter 5 of the 2009 IECC.

ARKANSAS AMENDMENTS

** Revise the ~~2004~~ Arkansas Energy Code for New Building Construction Supplements and Amendments (the 2003 Edition of the International Energy Conservation Code), as follows:*

CHAPTER 1
ADMINISTRATION

Delete entire CHAPTER 1 ADMINISTRATION. Replace with the ~~*2004*~~ *Arkansas Energy Code for New Building Construction Supplements and Amendments, CHAPTER 1, ADMINISTRATION AND ENFORCEMENT* as follows.

CHAPTER 1

ADMINISTRATION and ENFORCEMENT

SECTION 101
GENERAL

101.1 Title. These regulations shall be known as the ~~*2004*~~ *Arkansas Energy Code for New Building Construction Supplements and Amendments*, and shall be cited as such~~. It is referred to herein as "this code."~~ Unless otherwise specified, this *Arkansas Energy Code for New Building Construction Supplements and Amendments*, the 2003 International Energy Conservation Code and ASHRAE 90.1-2007 are referred to herein as "this Code" or "the Arkansas Energy Code."

101.2 Scope. This ~~code~~ Code establishes minimum prescriptive and performance-related regulations for the design of energy-efficient buildings and structures or portions thereof that provide facilities or shelter for public assembly, educational, business, mercantile, institutional, storage and residential occupancies, as well as those portions of factory and industrial occupancies designed primarily for human occupancy. This ~~code~~ Code thereby addresses the design of energy-efficient building envelopes and the selection and installation of energy-efficient mechanical,

service water-heating, electrical distribution and illumination systems and equipment for the effective use of energy in these buildings and structures. NOTE: All referenced Chapters, Sections and Tables in this Chapter correspond directly to the *International Energy Conservation Code, 2003 Edition* unless otherwise noted.

101.2.1 Exempt buildings. Buildings and structures indicated in Sections 101.2.1.1 through 101.2.1.5 shall be exempt from the building envelope provisions of this ~~code~~ Code, but shall comply with the provisions for building, mechanical, service water heating and lighting systems.

101.2.1.1 Separated buildings. Buildings and structures, or portions thereof separated by building envelope assemblies from the remainder of the building, that have a peak design rate of energy usage less than 3.4 Btu/h per square foot (10.7 W/m^2) or 1.0 watt per square foot (10.7 W/m^2) of floor area for space conditioning purposes.

101.2.1.2 Unconditioned buildings. Buildings and structures or portions thereof, which are neither heated nor cooled.

101.2.1.3: Buildings and structures or portions thereof that are exclusively heated or cooled by renewable fuels.

101.2.1.4: Mobile homes

101.2.1.5: 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.

101.2.2 Applicability. The provisions of this ~~code~~ Code shall apply to all matters affecting or relating to structures and premises, as set forth in Section 101. Where, in a specific case, different sections of this ~~code~~ Code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

101.2.2.1 Existing installations. Except as otherwise provided for in this chapter, a provision in this ~~code~~ Code shall not require the removal, alteration or abandonment of, nor prevent the continued utilization and maintenance of, an existing building envelope, mechanical, service water-heating, electrical distribution or illumination system lawfully in existence at the time of the adoption of this ~~code~~ Code.

101.2.2.2 Additions to Existing Buildings: Additions to existing buildings or structures may be made to such buildings or structures without making the entire building or structure comply. The new addition shall conform to the provisions of this Code as they relate to new construction only.

101.2.2.3 Renovations: Any rehabilitation of an existing building that requires more than 25 percent of the gross floor area or volume of the entire building to be rebuilt shall comply with this Code. Cosmetic work such as painting, wall covering, wall paneling, and floor covering shall not be included.

101.2.2.4 Historic buildings. The provisions of this ~~code~~ Code relating to the construction, alteration, repair, enlargement, restoration, relocation or movement of buildings or structures shall not be mandatory for existing buildings or structures specifically identified and classified as historically significant by the state or local jurisdiction, listed in *The National Register of Historic Places* or which have been determined to be eligible for such listing.

101.2.3 Mixed occupancy. When a building houses more than one occupancy, each portion of the building shall conform to the requirements for the occupancy housed therein. Where minor accessory uses do not occupy more than 10 percent of the area of any floor of a building, the major use shall be considered the building occupancy. Buildings, other than detached one- and two-family dwellings and townhouses, with a height of four or more stories above grade shall be considered commercial buildings for purposes of this ~~code~~ Code, regardless of the number of floors that are classified as residential occupancy.

101.3 Intent. The provisions of this ~~code~~ Code shall regulate the design of building envelopes for adequate thermal resistance and low air leakage and the design and selection of mechanical, electrical, service water-heating and illumination systems and equipment which will enable effective use of energy in new building construction. It is intended that these provisions provide flexibility to permit the use of innovative approaches and techniques to

achieve effective utilization of energy. This ~~code~~ Code is not intended to abridge safety, health or environmental requirements under other applicable codes or ordinances.

101.4 Compliance. Compliance with this ~~code~~ Code shall be determined in accordance with Sections 101.4.1 and 101.4.2.

101.4.1 Residential buildings. For residential buildings the following shall be used as the basis for compliance assessment: a systems approach for the entire building (Chapter 4), an approach based on performance of individual components of the building envelope (Chapter 5), an approach based on performance of the total building envelope (Chapter 5), an approach based on acceptable practice for each envelope component (Chapter 5), an approach by prescriptive specification for individual components of the building envelope (Chapter 5), or an approach based on simplified, prescriptive specification (Chapter 6) where the conditions set forth in Section 101.4.1.1 or 101.4.1.2 are satisfied.

101.4.1.1 Detached one- and two-family dwellings. When the glazing area does not exceed 15 percent of the gross area of exterior walls.

101.4.1.2 Residential buildings, Group R-2, R-4 or townhouses. When the glazing area does not exceed 25 percent of the gross area of exterior walls.

101.4.2 Commercial buildings. For commercial buildings~~, a prescriptive or performance-based approach (Chapter 7)~~ ANSI/ASHRAE/IESNA 90.1-2007 or Chapter 5 of the 2009 IECC ~~or as specified by acceptable practice (Chapter 8)~~ shall be used as the basis for compliance assessment.

101.4.3 Builder Acknowledgement. Cities or counties that issue building permits are required to record that the builder has certified that the proposed building will comply with the Arkansas Energy Code.

101.5 Adoption. Act 1196 of 2009 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.

101.5.1 Date of Adoption. Applicable cities or counties shall adopt the Arkansas Energy Code prior to December 31, 2012.

101.5.2 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 Energy Office. If the applicable city or county has not adopted the Arkansas Energy Code by December 31, 2012, the mayor and/or county judge is required to submit a letter to the Arkansas Energy Office, no later than 60 days after this deadline, describing why the city or county is not in compliance with Act 1196 of 2009.

SECTION 102
MATERIALS, SYSTEMS AND EQUIPMENT

102.1 General. Materials, equipment and systems shall be identified in a manner that will allow a determination of their compliance with the applicable provisions of this ~~code~~ Code.

102.2 Materials, equipment and systems installation. All insulation materials, caulking and weatherstripping, fenestration assemblies, mechanical equipment and systems components, and water-heating equipment and system components shall be installed in accordance with the manufacturer's installation instructions.

102.3 Maintenance information. Required regular maintenance actions shall be clearly stated and incorporated on a readily accessible label. Such label shall include the title or publication number, the operation and maintenance manual for that particular model and type of product. Maintenance instructions shall be furnished for equipment that requires preventive maintenance for efficient operation.

102.4 Insulation installation. Roof/ceiling, floor, wall cavity and duct distribution systems insulation shall be installed in a manner that permits inspection of the manufacturer's *R*-value identification mark.

102.4.1 Protection of exposed foundation insulation. Insulation applied to the exterior of foundation walls and around the perimeter of slab-on-grade floors shall have a rigid, opaque and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed area of the exterior insulation and extend a minimum of 6 inches (153 mm) below grade.

102.5 Identification. Materials, equipment and systems shall be identified in accordance with Sections 102.5.1, 102.5.2 and 102.5.3.

102.5.1 Building envelope insulation. A thermal resistance *(*R) identification mark shall be applied by the manufacturer to each piece of building envelope insulation 12 inches (305 mm) or greater in width. Alternatively, the insulation installer shall provide a signed and dated certification for the insulation installed in each element of the building envelope, listing the type of insulation installations in roof/ceilings, the manufacturer and the *R*-value. For blown-in or sprayed insulation, the installer shall also provide the initial installed thickness, the settled thickness, the coverage area and the number of bags installed. Where blown-in or sprayed insulation is installed in walls, floors and cathedral ceilings, the installer shall provide a certification of the installed density and *R*-value. The installer shall post the certification in a conspicuous place on the job site.

102.5.1.1 Roof/ceiling insulation. The thickness of roof/ceiling insulation that is either blown in or sprayed shall be identified by thickness markers that are labeled in inches or millimeters installed at least one for every 300 square feet (28 m^2) throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness and minimum settled thickness with numbers a minimum of 1 inch (25 mm) in height. Each marker shall face the attic access. The thickness of installed insulation shall meet or exceed the minimum initial installed thickness shown by the marker.

102.5.2 Fenestration product rating, certification and labeling. *U*-factors of fenestration products (windows, doors and skylights) shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer. The solar heat gain coefficient (SHGC) of glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Where a shading coefficient for a fenestration product is used, it shall be determined by converting the product's SHGC, as determined in accordance with NFRC 200, to a shading coefficient, by dividing the SHGC by 0.87. Such certified and labeled *U*-factors and SHGCs shall be accepted for purposes of determining compliance with the building envelope requirements of this ~~code~~ Code.

When a manufacturer has not determined product *U*-factor in accordance with NFRC 100 for a particular product line, compliance with the building envelope requirements of this ~~code~~ Code shall be determined by assigning such products a default *U*-factor in accordance with Tables 102.5.2(1) and 102.5.2(2). When a SHGC or shading coefficient is used for code compliance and a manufacturer has not determined product SHGC in accordance with NFRC 200 for a particular product line, compliance with the building envelope requirements of this ~~code~~ Code shall be determined by assigning such products a default SHGC in accordance with Table 102.5.2(3). Product features must be verifiable for the product to qualify for the default value associated with those features. Where the existence of a particular feature cannot be determined with reasonable certainty, the product shall not receive credit for that feature. Where a composite of materials from two different product types is used, the product shall be assigned the higher *U*-factor.

TABLE 102.5.2(1)
***U*-FACTOR DEFAULT TABLE FOR WINDOWS, GLAZED DOORS AND SKYLIGHTS**

FRAME MATERIAL AND PRODUCT TYPE[a]	SINGLE GLAZED	DOUBLE GLAZED
Metal without thermal break:		
Curtin wall	1.22	0.79
Fixed	1.13	0.69
Garden window	2.60	1.81
Operable (including sliding and swinging glass doors)	1.27	0.87
Site-assembled sloped/overhead glazing	1.36	0.82
Skylight	1.98	1.31
Metal with thermal break:		
Curtain wall	1.11	0.68
Fixed	1.07	0.63
Operable (including sliding and swinging glass doors)	1.08	0.65
Site-assembled sloped/overhead glazing	1.25	0.70
Skylight	1.89	1.11
Reinforced vinyl/metal clad wood:		
Fixed	0.98	0.56
Operable (including sliding and swinging glass doors)	0.90	0.57
Skylight	1.75	1.05
Wood/vinyl/fiberglass:		
Fixed	0.98	0.56
Garden window	2.31	1.61
Operable (including sliding and swinging glass doors)	0.89	0.55
Skylight	1.47	0.84

a. Glass block assemblies with mortar but without reinforcing or framing shall have a *U*-factor of 0.60.

TABLE 102.5.2(2)
***U*-FACTOR DEFAULT TABLE FOR NONGLAZED DOORS**

DOOR TYPE	WITH FOAM CORE	WITHOUT FOAM CORE
Steel doors (1.75 inches thick)	0.35	0.60
	WITH STORM DOOR	**WITHOUT STORM DOOR**
Wood doors (1.75 inches thick)		
Hollow core flush	0.32	0.46
Panel with 0.438-inch panels	0.36	0.54
Panel with 1.125-inch panels	0.28	0.39
Solid core flush	0.26	0.40

For SI: 1 inch = 25.4 mm.

TABLE 102.5.2(3)
SHGC DEFAULT TABLE FOR FENESTRATION

PRODUCT DESCRIPTION	SINGLE GLAZED				DOUBLE GLAZED			
	Clear	Bronze	Green	Gray	Clear + Clear	Bronze + Clear	Green + Clear	Gray + Clear
Metal frames								
Fixed	0.78	0.67	0.65	0.64	0.68	0.57	0.55	0.54
Operable	0.75	0.64	0.62	0.61	0.66	0.55	0.53	0.52
Nonmetal frames								
Fixed	0.75	0.64	0.62	0.61	0.66	0.54	0.53	0.52
Operable	0.63	0.54	0.53	0.52	0.55	0.46	0.45	0.44

SECTION 103
ALTERNATE MATERIALS—METHOD OF CONSTRUCTION, DESIGN OR INSULATING SYSTEMS

103.1 General. The provisions of this ~~code~~ Code are not intended to prevent the use of any material, method of construction, design or insulating system not specifically prescribed herein, provided that such construction, design or insulating system has been approved by the code official as meeting the intent of the code.

Compliance with specific provisions of this ~~code~~ Code may be determined through the use of deemed to comply computer software, worksheets, compliance manuals and other similar materials when they have been approved by the Arkansas Energy Office.

SECTION 104
CONSTRUCTION DOCUMENTS

104.1 General. Construction documents and other supporting data shall be submitted in one or more sets with each application for a permit. The construction documents and designs submitted under the provisions of Chapter 4 shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the code official is authorized to require additional construction documents to be prepared by a registered design professional.

Exceptions:
1. The code official is authorized to waive the submission of construction documents and other supporting data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this ~~code~~ Code.

2. For residential buildings having a conditioned floor area of 5,000 square feet (465 m^2) or less, designs submitted under the provisions of Chapter 4 shall be prepared by anyone having qualifications acceptable to the code official.

104.2 Information on construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documents are permitted to be submitted when approved by the code official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in sufficient detail pertinent data and features of the building and the equipment and systems as herein governed, including, but not limited to, design criteria, exterior envelope component materials, *U*-factors of the envelope systems, *U*-factors of fenestration products, *R*-values of insulating materials, size and type of apparatus and equipment, equipment and systems controls and other pertinent data to indicate compliance with the requirements of this ~~code~~ Code and relevant laws, ordinances, rules and regulations, as determined by the code official.

104.3 Design Professional: Architects and engineers employed to prepare plans and specifications for new buildings shall ensure the plans and specifications comply with the provisions of this Code in a manner consistent with their obligations under Arkansas State law (see also the *Arkansas Fire Prevention Code ~~2002~~ 2007 Edition*, Volume I Fire, Volume II Building).

SECTION 105
CONTRACTOR / BUILDER COMPLIANCE

105.1 General: Compliance with this Code shall be the obligation of the licensed builder or contractor.

105.1.1 Compliance: Compliance signifies that the licensed builder or contractor has constructed or will construct or renovate the building in compliance with the requirements of this Code, and that by inspection within a two-year period from the date of completion, if the building fails to meet the Code's specifications, understands that he or she is responsible for bringing the building into compliance with this Code.

105.1.2 Compliance Materials: Compliance materials, instructions and Arkansas Energy Office approved tools and third-party services, are made a part of this Code by reference.

105.1.3 Compliance by Self-Builders: Compliance with this Code by builders who build, or contract to build, single-family buildings for their own occupancy is voluntary.

105.2 Compliance Alternatives

105.2.1 Alternative Compliance Tools: Arkansas Energy Office approved alternative compliance tools may be used to validate code compliance.

105.2.2 Federally Financed Homes: Newly constructed single and multi-family buildings financed through HUD/FHA, VA, and USDA Rural Development programs shall meet the thermal performance requirements of this Code.

SECTION 106
INSPECTIONS

106.1 General. Construction or work that must comply with this ~~code~~ Code shall be subject to inspection by the Arkansas Energy Office or its agent, or by the code official ~~if a county or municipality elects to adopt this Code~~.

~~**106.2 Approvals required.** No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the code official. No construction shall be concealed without inspection approval from the code official.~~

~~**106.3**~~ **106.2 Final inspection.** Code officials within a county or municipality who have adopted this Code and conduct final inspections as a part of their normal operations shall perform a final inspection and approval for buildings when completed and ready for occupancy.

~~**106.4**~~ **106.3 Reinspection.** The Arkansas Energy Office or its agent or code official may cause a structure to be reinspected.

SECTION 107
ENFORCEMENT

107.1 General: Enforcement of this Code shall be the responsibility of the Arkansas Energy Office or local government (~~if~~ when adopted).

107.2 Local Government: ~~Any county or municipality may elect~~ All cities or municipalities that issue building permits are required to adopt this Code for new construction, additions and renovation of existing structures.

However, the local municipality shall not in any way modify the energy conservation standards in this Code or promulgate or adopt rules or regulations that are less stringent than this Code.

A local government may exercise other administrative and enforcement procedures that it deems necessary to affect the purposes of this Code, including, but not limited to, prior plan approval, building permit requirements, and inspections during the course of construction.

SECTION 108
APPEALS

108.1 Board of Appeals: Any appeal of the energy conservation standards contained in this Code shall be made to the Board of Appeals established by the Arkansas Energy Office, and a decision on an appeal will be made within 45 days of its filing.

108.2 Local Government: In any county or municipality where this Code is adopted, the governing body shall establish a Board of Appeals to adjudicate complaints arising from the application of the Code. When a Board of Appeals is established, the governing body shall prescribe procedures for providing a fair and reasonable hearing of the appeal.

SECTION 109
VALIDITY

109.1 General. If a section, subsection, sentence, clause or phrase of this ~~code~~ Code is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ~~code~~ Code.

SECTION 110
RESPONSIBILITY

110.1 These minimum standards shall not be construed as relieving the licensed builder or contractor of his or her responsibility for compliance with local ordinances, codes, and regulations.

SECTION 111
REFERENCED STANDARDS

111.1 General. The standards, and portions thereof, which are referred to in this ~~code~~ Code and listed in Chapter 10, shall be considered part of the requirements of this ~~code~~ Code to the extent of such reference.

111.2 Conflicting requirements. When a section of this ~~code~~ Code and a section of a referenced standard from Chapter 10 specify different materials, methods of construction or other requirements, the provisions of this ~~code~~ Code shall apply.

SECTION 112
EFFECTIVE DATE

112.1 The effective date of this Code for residential buildings, as defined herein, is 10/1/2004. The effective date of this Code for commercial buildings, as defined herein, is ~~10/1/2004~~ 1/1/2013.

CHAPTER 2
DEFINITIONS

* Revise Section 202 GENERAL DEFINITIONS to read as follows:

EFFICIENCY, HVAC SYSTEM. The ratio of useful energy output (at the point of use) to the energy input in consistent units for a designated time period, expressed in percent.

RECOOLING. The removal of heat by sensible cooling of the supply air (directly or indirectly) which has been previously heated above the temperature to which the air is to be supplied to the conditioned space for proper control of the temperature of that space.

RECOVERED ENERGY. Energy utilized which would otherwise be wasted (i.e., not contribute to a desired end use) from an energy utilization system.

RESET. Adjustment of the set point of a control instrument to a higher or lower value automatically or manually to conserve energy.

RESIDENTIAL BUILDING. Detached one- and two-family dwellings.

CHAPTER 3
DESIGN CONDITIONS

TABLE 302.1
EXTERIOR DESIGN CONDITIONS

* Revise footnotes *b* and *c* and add footnote *d* under table 302.1 as follows:

b. The degree days heating (base 60°F) and cooling (base 60°F) shall be selected from NOAA "Annual Degree Days to Selected Bases Derived from the 1961-1990 Normals," the ASHRAE *Handbook of Fundamentals*, data available from adjacent military installations, or other source of local weather data acceptable to the code official.

c. The residential climate zone shall be selected from the map provided in Figure 302.1(1) on the following page.

d. Load calculations may be determined by using ACCA Manual J for residential, and ACCA Manual N for commercial.

* Add the following FIGURES: 302.1(1) showing the four residential climate zones in Arkansas with a list of counties and their associated climate zones, and ~~add~~ Table 302.2 Arkansas HDD and zones; and add FIGURE 501.3 showing the two commercial climate zones in Arkansas that apply to Chapter 5 of the 2009 IECC and ASHRAE 90.1-2007.

Arkansas <u>Residential</u> Climate Zones

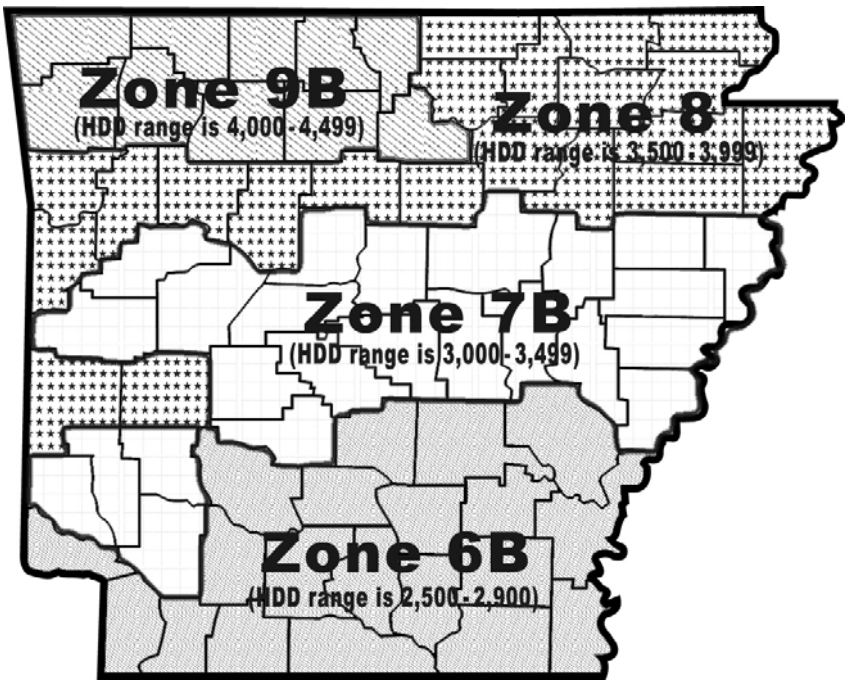

FIGURE 302.1(1)
ARKANSAS <u>RESIDENTIAL CLIMATE ZONES</u>

Zone	County
6B	Arkansas (H)
6B	Ashley (H)
9B	Baxter
9B	Benton
9B	Boone
6B	Bradley (H)
6B	Calhoun (H)
9B	Carroll
6B	Chicot (H)
6B	Clark (H)
8	Clay
8	Cleburne
6B	Cleveland (H)
6B	Columbia (H)
7B	Conway (H)
8	Craighead
8	Crawford
7B	Crittenden (H)
7B	Cross (H)
6B	Dallas (H)
6B	Desha (H)
6B	Drew (H)
7B	Faulkner (H)
8	Franklin
8	Fulton
7B	Garland (H)
6B	Grant (H)
8	Greene
7B	Hempstead (H)
7B	Hot Spring (H)
7B	Howard (H)
8	Independence
8	Izard
8	Jackson
6B	Jefferson (H)
8	Johnson
6B	Lafayette (H)

Zone	County
8	Lawrence
7B	Lee (H)
6B	Lincoln (H)
6B	Little River (H)
7B	Logan (H)
7B	Lonoke (H)
9B	Madison
9B	Marion
6B	Miller (H)
8	Mississippi
7B	Monroe (H)
8	Montgomery
6B	Nevada (H)
9B	Newton
6B	Ouachita (H)
7B	Perry (H)
7B	Phillips (H)
7B	Pike (H)
8	Poinsett
8	Polk
8	Pope
7B	Prairie (H)
7B	Pulaski (H)
8	Randolph
7B	Saline (H)
7B	Scott (H)
9B	Searcy
8	Sebastian
7B	Sevier (H)
8	Sharp
7B	St Francis (H)
9B	Stone
6B	Union (H)
8	Van Buren
9B	Washington
7B	White (H)
7B	Woodruff (H)
7B	Yell (H)

Table 302.2 Arkansas HDD* and <u>residential climate</u> zones

Zone	HDD
6B	2,500 – 2,999
7B	3,000 – 3,499
8	3,500 – 3,999
9B	4,000 – 4,499

* HDD = Heating Degree Days

Note: Counties identified with (H) shall be considered "hot and humid climate areas" for purposes of the application of Section 502.1.1.

CHAPTER 4
RESIDENTIAL BUILDING DESIGN BY SYSTEMS ANALYSIS AND DESIGN OF BUILDINGS UTILIZING RENEWABLE ENERGY SOURCES

* Delete Section 402.2.3.1.3 FENESTRATION SYSTEM SOLAR HEAT GAIN COEFFICIENT, STANDARD DESIGN without substitution.

CHAPTER 5
RESIDENTIAL BUILDING DESIGN BY COMPONENT PERFORMANCE APPROACH

* Revise Exception 2 in Section 502.1.1 MOISTURE CONTROL as follows:

2. Vapor retarders shall not be required where the county in which the building is being constructed is considered a hot and humid climate area and identified as such in Figure 302.1(1).

* Delete Section 502.1.5 FENESTRATION SOLAR HEAT GAIN COEFFICIENT without substitution.

* Revise Table 503.3.3.3 MINIMUM DUCT INSULATION as follows:

TABLE 503.3.3.3
MINIMUM DUCT INSULATION [a]

ANNUAL HEATING DEGREE DAYS	Insulation *R*-value [d]			
	Ducts in unconditioned attics or outside building		Ducts in unconditioned basements, crawl spaces, garages, and other unconditioned spaces [c]	
	Supply	Return	Supply	Return
< 1,500	8	4	4	0
1,500 to 3,500	5.6	5.6	5.6	5.6
3,501 to 7,500	5.6	5.6	5.6	5.6
> 7,500	11	6	11	2

* Delete footnote b in Table 503.3.3.3 without substitution.

SECTION 503
BUILDING MECHANICAL SYSTEMS AND EQUIPMENT

* Replace the *International Mechanical Code* with the *Arkansas Mechanical Code* in Sections 503.3.3.4 DUCT CONSTRUCTION, 503.3.3.4.1 HIGH-AND MEDIUM-PRESSURE DUCT SYSTEMS and 503.3.3.4.2 LOW-PRESSURE DUCT SYSTEMS.

CHAPTER 6
SIMPLIFIED PRESCRIPTIVE REQUIREMENTS FOR DETACHED ONE- AND TWO-FAMILY DWELLINGS AND GROUP R-2, R-4 OR TOWNHOUSE RESIDENTIAL BUILDINGS

* Revise Section 601.2 COMPLIANCE to include deemed to comply tools that are approved by the Arkansas Energy Office.

601.2 Compliance. Compliance shall be demonstrated in accordance with Section 601.2.1 or 601.2.2. Deemed to comply tools that are approved by the Arkansas Energy Office shall be permitted to demonstrate compliance.

* Revise Section 601.3.2.1 DEFAULT FENESTRATION PERFORMANCE as follows:

601.3.2.1 Default fenestration performance. Where a manufacturer has not determined a fenestration product's *U*-factor in accordance with NFRC 100, compliance shall be determined by assigning such products a default *U*-factor from Tables 102.5.2(1) and 102.5.2(2).

* Modify Exception in Section 602.1.6 SLAB-ON-GRADE FLOORS as follows:

Exception: Slab perimeter insulation is not required for unheated slabs in areas of moderate to very heavy termite infestation probability as shown in Figure 502.2(7). Where this exception is used, building envelope compliance shall be demonstrated by using Section 502.2.2 or Chapter 4 with the actual "Slab perimeter *R*-value and depth" in Table 602.1, or by using Section 502.2.4.

* Delete Section 602.2 MAXIMUM SOLAR HEAT GAIN COEFFICIENT FOR FENESTRATION PRODUCTS without substitution.

CHAPTER 7
BUILDING DESIGN FOR ALL COMMERCIAL BUILDINGS

* Revise ASHRAE/IESNA 90.1 to ANSI/ASHRAE/IESNA 90.1-~~2001~~ 2007 in the following section and revise the exception to comply with Chapter 5 in the 2009 IECC.

701.1 Scope. Commercial buildings shall meet the requirements of ANSI/ASHRAE/IESNA 90.1-~~2001~~ 2007.

Exception: Commercial buildings that comply with Chapter 5 in the 2009 IECC with its associated definitions, general requirements and reference standards.

Delete entire Chapter 8. Replace with Chapter 5 in the 2009 IECC: Commercial Energy Efficiency.

Arkansas Commercial Climate Zones

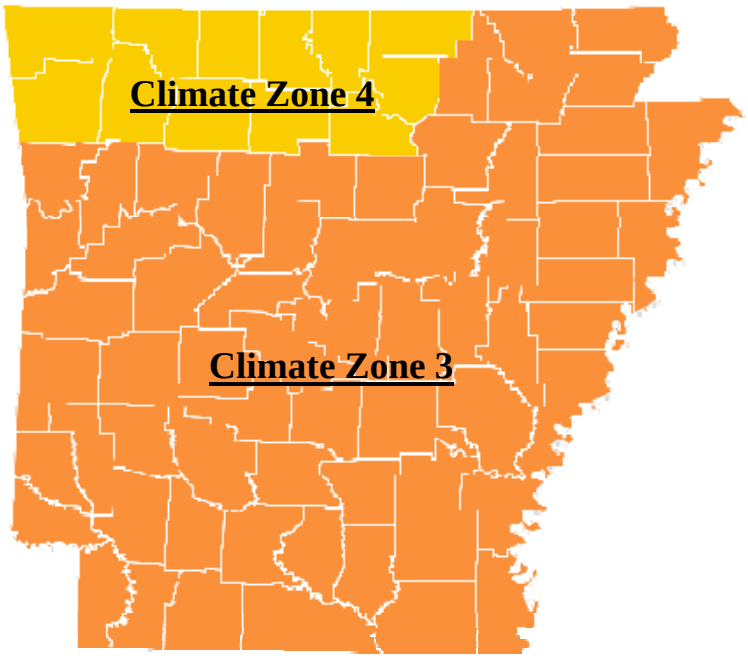

FIGURE 501.3
ARKANSAS COMMERCIAL CLIMATE ZONES

Climate Zones 3 and 4 are referenced in the ANSI/ASHRAE/IESNA 90.1-2007 and the 2009 International Energy Conservation Code.

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, Dross, 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, Sebastian, Sevier, Sharp, St. Francis, Union, Van Buren, White, Woodruff and Yell.

~~CHAPTER 8~~
~~DESIGN BY ACCEPTABLE PRACTICE FOR COMMERCIAL BUILDINGS~~

~~* Replace the *International Mechanical Code* with the *Arkansas Mechanical Code* in Sections 803.2.5 VENTILATION, 803.2.6 COOLING WITH OUTDOOR AIR, 803.2.8.1 DUCT CONSTRUCTION, 803.2.8.1.1 HIGH- AND MEDIUM-PRESSURE DUCT SYSTEMS, 803.2.8.1.2 LOW-PRESSURE DUCT SYSTEMS, 803.3.4 REQUIREMENTS FOR COMPLEX MECHANICAL SYSTEMS SERVING MULTIPLE ZONES, and 803.3.8.1 AIR SYSTEM BALANCING.~~

~~* Replace ASHRAE/IESNA 90.1 with ANSI/ASHRAE/IESNA 90.1-2001 in Sections 801.2 APPLICATIONS, SECTION 802 BUILDING ENVELOPE REQUIREMENTS, 802.1 GENERAL, and 802.2 CRITERIA.~~

CHAPTER 10
REFERENCED STANDARDS

* Revise Chapter 10 REFERENCED STANDARDS to include the following:

AFC

Arkansas Fire Prevention Code
State Fire Marshal's Office
#1 State Police Plaza Dr
Little Rock, AR 72209
(501) 618-8624
Fax (501) 618-8621

Standard Reference Number	Title	Referenced in Code Section Number
AFC	.....	104.3

AMC

Arkansas Mechanical Code
Department of Health
Division of Protective Health Codes
4815 West Markham Street, Slot 24
Little Rock, AR 72205-3867
(501) 661-2642
Fax (501) 661-2671
~~http://www.healthyarkansas.com/phc/~~
http://www.healthy.arkansas.gov/programsServices/environmentalHealth/ProtectiveHealthCodes/Pages/default.aspx

Standard Reference Number	Title	Referenced in Code Section Number
AMC	.....	503.3.3.4, 503.3.3.4.1, 503.3.3.4.2, ~~803.2.5, 803.2.6, 803.2.8.1, 803.2.8.1.1, 803.2.8.1.2, 803~~