



Georgia State Supplements and Amendments to the International Energy Conservation Code

(2000 Edition)



Georgia Department of Community Affairs
Planning and Environmental Management Division
60 Executive Park South, N.E.
Atlanta, Georgia 30329-2231
(404) 679-3118
www.dca.state.ga.us

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**GEORGIA STATE
ENERGY CODE FOR BUILDINGS
(INTERNATIONAL ENERGY CONSERVATION CODE)**

The GEORGIA STATE ENERGY CODE FOR BUILDINGS (International Energy Conservation Code), 2000 Edition, published by the International Code Council, when used in conjunction with these Georgia Supplements and Amendments and the Georgia Supplements and Amendments adopted effective January 1 of 2003 and 2005, shall constitute the official *Georgia State Energy Code for Buildings*.

GEORGIA STATE AMENDMENTS

SCOPE:

Each chapter of these Georgia Supplements and Amendments corresponds with a chapter of the *International Energy Conservation Code (IECC)*.

- Chapter 1: Administration and Enforcement.
- Chapter 2: Definitions.
- Chapter 3: Design Conditions. ‘The criteria of this chapter establish the design conditions for use with Chapters 4, 5, 6 and 8.’
- Chapter 4: Residential Building Design by Systems Analysis and Design of Buildings Utilizing Renewable Energy Sources. ‘This chapter establishes design criteria in terms of total energy use by a residential building, including all of its systems.’ (One method by which to achieve compliance for low-rise residential construction.)
- Chapter 5: Residential Building Design by Component¹ Performance Approach. ‘Residential buildings or portions thereof that enclose conditioned space shall be constructed to meet the requirements of this chapter.’ (One method by which to achieve compliance for low-rise residential construction.) This chapter offers the use of ‘trade-offs,’ whereby values between building components may be substituted or traded-off for compliance. A properly completed Georgia Trade-Off Worksheet² or the use of appropriate computer software (*REScheck*³) may be used to validate any trade-off.
- Chapter 6: Simplified Prescriptive Requirements for Residential Buildings, Type A-1 and A-2. ‘This chapter sets forth energy-efficiency-related requirements for the design and construction of Type A-1 and A-2 residential buildings.’ (One method by which to achieve compliance for low-rise residential construction.)
- Chapter 7: Building Design for All Commercial Buildings. Commercial buildings [except those that comply with Chapter 8, Design by Acceptable Practice for Commercial Buildings; the Single Step Compliance for Simple Commercial Buildings; or appropriate computer software (*COMcheck*³)] shall meet the requirements of *ANSI/ASHRAE/IESNA Standard 90.1-2004*. (One method by which to achieve compliance for commercial and high-rise residential construction.)
- Chapter 8: Design by Acceptable Practice for Commercial Buildings. ‘The requirements contained in this chapter are applicable to commercial buildings, or portions of commercial buildings.’ (One method by which to achieve compliance for commercial and high-rise residential construction.)

- Chapter 9: Referenced Standards.
- Appendix A.
- Appendix B. Provides additional prescriptive methods by which to achieve compliance, simple methods and forms to assist in compliance calculations, and illustrations to assist in the understanding of compliance requirements.

Individual structures should follow a single compliance method and not a combination of compliance methods. The ‘basic requirements’ of the *International Energy Conservation Code (IECC)* apply to all compliance methods.

Where these Georgia Supplements and Amendments conflict with either the *International Energy Conservation Code (IECC)* or *ANSI/ASHRAE/IESNA Standard 90.1-2004*, these Georgia Supplements and Amendments shall take precedence.

Air infiltration accounts for substantial heat loss, heat gain and moisture migration in a building. Proper sealing around all doors, windows and other envelope penetrations through the walls, ceiling and foundation is as important to code compliance as are proper insulation R-values and component U-values.

It is not the intention of this code to abridge safety or health. Where the *International Energy Conservation Code (IECC)* and these Georgia Supplements and Amendments conflict with other mandatory *State Minimum Standard Codes*, the *International Energy Conservation Code (IECC)* and these Georgia Supplements and Amendments shall be enforced as written provided safety, health or environmental requirements of other mandatory *State Minimum Standard Codes* are not abridged.

CODE REFERENCE:

- (a) Replace all references to *ANSI/ASHRAE/IESNA 90.1-1999* and *ANSI/ASHRAE/IESNA 90.1-2001* with references to *ANSI/ASHRAE/IESNA 90.1-2004*.

APPENDICES:

Appendices are not enforceable unless they are specifically referenced in the body of the code or adopted by the Department of Community Affairs or the authority having jurisdiction.

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1. ‘Component’ refers to a particular element of a building, such as a ceiling, an exterior wall, a floor, etc.
 2. For the ‘Georgia Trade-Off Worksheet,’ see Appendix B.
 3. *REScheck* and *COMcheck* are computer programs developed by Pacific Northwest National Laboratories for the U.S. Department of Energy to assist in demonstration of compliance with the *International Energy Conservation Code (IECC)*. They can be obtained from the D.O.E. by calling (800) 270-CODE (2633) or free of charge online at www.energycodes.gov.

**Revise the Georgia State Energy Code for Buildings (International Energy Conservation Code), 2000 Edition, as follows:*

**CHAPTER 7
BUILDING DESIGN FOR ALL COMMERCIAL BUILDINGS**

**SECTION 701
SCOPE**

*Add new Table A2.3 ‘Assembly U-Factors for Metal Building Roofs’ from ANSI/ASHRAE/IESNA Standard 90.1-2004.

See page 5.

(Effective January 1, 2006)

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

**SECTION 805
LIGHTING SYSTEMS**

*Delete Table 805.4.2 ‘Interior Lighting Power’ and substitute.

See page 6.

(Effective January 1, 2006)

*Revise Section 805.4.2.1 ‘Entire building method’ to add as follows:

805.4.2.1 Entire building method. Under this approach, the interior lighting power (Watts) is the value from Table 805.4.2 for the building type times the conditioned floor area of the entire building. The interior lighting power (Watts) shall not be increased by the allowances contained in the footnotes of Table 805.4.2 when using the entire building method.

(Effective January 1, 2006)

**CHAPTER 9
REFERENCED STANDARDS**

*Add new Figure 9-3 ‘Metal Roof U-Factors with Fiberglass Insulation Installed Over the Purlins¹.’

See page 7.

(Effective January 1, 2006)

GENERAL

*Replace ‘ANSI/ASHRAE/IESNA Standard 90.1-2001’ with ‘ANSI/ASHRAE/IESNA Standard 90.1-2004’ throughout.

(Effective January 1, 2006)

**TABLE A2.3
ASSEMBLY U-FACTORS FOR METAL BUILDING ROOFS**

Insulation System	Rated R-Value of Insulation	Total Rated R-Value of Insulation	Overall U-Factor for Entire Base Roof Assembly	Overall U-Factor for Assembly of Base Roof Plus Continuous Insulation (Uninterrupted by Framing)					
				Rated R-Value of Continuous Insulation					
				R-5.6	R-11.2	R-16.8	R-22.4	R-28	R-33.6
Standing Seam Roofs with Thermal Blocks									
Single Layer	None	0	1.280	0.162	0.087	0.059	0.045	0.036	0.030
	R-6	6	0.167	0.086	0.058	0.044	0.035	0.029	0.025
	R-10	10	0.097	0.063	0.046	0.037	0.031	0.026	0.023
	R-11	11	0.092	0.061	0.045	0.036	0.030	0.026	0.022
	R-13	13	0.083	0.057	0.043	0.035	0.029	0.025	0.022
	R-16	16	0.072	0.051	0.040	0.033	0.028	0.024	0.021
	R-19	19	0.065	0.048	0.038	0.031	0.026	0.023	0.020
Double Layer	R-10+R-10	20	0.063	0.047	0.037	0.031	0.026	0.023	0.020
	R-10+R-11	21	0.061	0.045	0.036	0.030	0.026	0.023	0.020
	R-11+R-11	22	0.060	0.045	0.036	0.030	0.026	0.022	0.020
	R-10+R-13	23	0.058	0.044	0.035	0.029	0.025	0.022	0.020
	R-11+R-13	24	0.057	0.043	0.035	0.029	0.025	0.022	0.020
	R-13+R-13	26	0.055	0.042	0.034	0.029	0.025	0.022	0.019
	R-10+R-19	29	0.052	0.040	0.033	0.028	0.024	0.021	0.019
	R-11+R-19	30	0.051	0.040	0.032	0.027	0.024	0.021	0.019
	R-13+R-19	32	0.049	0.038	0.032	0.027	0.023	0.021	0.019
R-16+R-19	35	0.047	0.037	0.031	0.026	0.023	0.020	0.018	
R-19+R-19	38	0.046	0.037	0.030	0.026	0.023	0.020	0.018	
(Multiple R-values are listed in order from inside to outside)									
Screw Down Roofs									
	R-10	10	0.153	0.082	0.056	0.043	0.035	0.029	0.025
	R-11	11	0.139	0.078	0.054	0.042	0.034	0.028	0.025
	R-13	13	0.130	0.075	0.053	0.041	0.033	0.028	0.024
	R-19	19	0.085	0.058	0.044	0.035	0.029	0.025	0.022
Filled Cavity with Thermal Blocks									
	R-19+R-10	29	0.041	0.033	0.028	0.024	0.021	0.0198	0.017
(Multiple R-values are listed in order from inside to outside)									
Based on purlins 5.0' O.C. For other purlin spacing use Figure 9-3 to calculate overall U-factor.									

**TABLE 805.4.2
INTERIOR LIGHTING POWER**

BUILDING OR AREA TYPE	ENTIRE BUILDING (W/ft²)	TENANT AREA OR PORTION OF BUILDING (W/ft²)
Auditorium	Not Applicable	1.8
Automotive facility	0.9	Not Applicable
Bank/financial institution ^a	Not Applicable	1.5
Classroom/lecture hall ^b	Not Applicable	1.4
Convention, conference or meeting center ^a	1.2	1.3
Corridor, restroom, support area	Not Applicable	0.9
Courthouse/town hall	1.2	Not Applicable
Dining ^a	Not Applicable	0.9
Dormitory	1.0	Not Applicable
Exercise center ^a	1.0	0.9
Exhibition hall	Not Applicable	1.3
Grocery store ^c	1.5	1.6
Gymnasium playing surface	Not Applicable	1.4
Hotel function ^a	1.0	1.3
Industrial work, < 20-foot ceiling height	Not Applicable	1.2
Industrial work, ≥ 20-foot ceiling height	Not Applicable	1.7
Kitchen	Not Applicable	1.2
Library ^a	1.3	1.7
Lobby—hotel ^a	Not Applicable	1.1
Lobby—other ^a	Not Applicable	1.3
Mall, arcade or atrium	Not Applicable	0.6
Medical and clinical care ^{b,d}	1.2	1.2
Motel	1.0	Not Applicable
Multifamily	0.7	Not Applicable
Museum ^b	1.1	1.0
Office ^b	1.0	1.1
Parking garage	0.3	Not Applicable
Penitentiary	1.0	Not Applicable
Police/fire station	1.0	Not Applicable
Post office	1.1	Not Applicable
Religious worship ^a	1.3	2.4
Restaurant ^a	1.6	0.9
Retail sales, wholesale showroom ^c	1.5	1.7
School	1.2	Not Applicable
Storage, industrial and commercial	0.8	0.8
Theaters—motion picture	1.2	1.2
Theaters—performance ^a	1.6	2.6
Transportation	1.0	Not Applicable
Other	0.6	1.0

For SI: 1 foot = 304.8 mm, 1 Watt per square foot = W/0.0929 m².

- a. Where lighting equipment is specified to be installed for decorative appearances in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits different from the circuits for general lighting, the smaller of the actual wattage of the decorative lighting equipment or 1.0 W/ft² times the area of the space that the decorative lighting equipment is in shall be added to the interior lighting power determined in accordance with this line item.
- b. Where lighting equipment is specified to be installed to meet requirements of visual display terminals as the primary viewing task, the smaller of the actual wattage of the lighting equipment or 0.35 W/ft² times the area of the space that the lighting equipment is in shall be added to the interior lighting power determined in accordance with this line item.
- c. Where lighting equipment is specified to be installed to highlight specific merchandise in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits different from the circuits for general lighting, the smaller of the actual wattage of the lighting equipment installed specifically for merchandise, or 1.6 W/ft² times the area of the specific display, or 3.9 W/ft² times the actual case or shelf area for displaying and selling fine merchandise such as jewelry, fine apparel and accessories, or china and silver, shall be added to the interior lighting power determined in accordance with this line item.
- d. Where lighting equipment is specified to be installed, the smaller of the actual wattage of the lighting equipment, or 1.0 W/ft² times the area of the emergency, recovery, medical supply and pharmacy space shall be added to the interior lighting power determined in accordance with this line item.

Figure 9-3
Metal Roof U-Factors with R-19 Fiberglass Insulation Installed Over the Purlins¹

Through-Fastened Metal Roof		Standing Seam Metal Roof ²	
Purlin Spacing ³	U-Factor	Purlin Spacing ³	U-Factor
2.0 ft	0.147	2.0 ft	0.112
2.5 ft	0.126	2.5 ft	0.096
3.0 ft	0.113	3.0 ft	0.086
3.5 ft	0.103	3.5 ft	0.079
4.0 ft	0.095	4.0 ft	0.073
4.5 ft	0.089	4.5 ft	0.068
5.0 ft	0.085	5.0 ft	0.065

Note 1: Through-fastened metal roof values are based on ORNL/MBMA November 2004 User Agreement Report, "Tests of Through-Fastened Metal Roof Assemblies." Standing seam metal roof values are based on ANSI/ASHRAE/IESNA 90.1-2004 for 5' purlin spacing and conservatively estimated for other spacing using the same relationship as through-fastened test data.

Note 2: Thermal block (1" x 3") is required between metal roof and purlins.

Note 3: For roofs with mixed spacing, calculate the average roof U-factor as shown below.

Example: Total roof is 8000 sq. ft. standing seam metal roof. 1600 sq. ft. (20 %) is on purlins spaced at 2.5 ft. 6400 sq. ft. (80%) is on purlins spaced at 5 ft. Average Roof U-Factor = $0.20 \times 0.096 + 0.80 \times 0.065 = 0.071$.

End of Amendments.