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# INTERNATIONAL ENERGY CONSERVATION CODE<sup>®</sup>

# 2003

2003 International Energy Conservation Code®

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# PREFACE

## Introduction

Internationally, code officials recognize the need for a modern, up-to-date energy conservation code addressing the design of energy-efficient building envelopes and installation of energy efficient mechanical, lighting and power systems through requirements emphasizing performance. The *International Energy Conservation Code*®, in this 2003 edition, is designed to meet these needs through model code regulations that will result in the optimal utilization of fossil fuel and nondepletable resources in all communities, large and small.

This comprehensive energy conservation code establishes minimum regulations for energy efficient buildings using prescriptive and performance-related provisions. It is founded on broad-based principles that make possible the use of new materials and new energy efficient designs. This 2003 edition is fully compatible with all the *International Codes* (“I-Codes”) published by the International Code Council (ICC), including the *International Building Code*, *ICC Electrical Code*, *International Existing Building Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *ICC Performance Code*, *International Plumbing Code*, *International Private Sewage Disposal Code*, *International Property Maintenance Code*, *International Residential Code*, *International Urban-Wildland Interface Code* and *International Zoning Code*.

The *International Energy Conservation Code* provisions provide many benefits, among which is the model code development process that offers an international forum for energy professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.

## Development

The first edition of the *International Energy Conservation Code* (1998) was based on the 1995 edition of the *Model Energy Code* promulgated by the Council of American Building Officials (CABO) and included changes approved through the CABO Code Development Procedures through 1997. CABO assigned all rights and responsibilities to the International Code Council and its three statutory members: Building Officials and Code Administrators International, Inc. (BOCA), International Conference of Building Officials (ICBO) and Southern Building Code Congress International (SBCCI). This 2003 edition presents the code as originally issued, with changes approved through the ICC Code Development Process through 2002. A new edition such as this is promulgated every three years.

With the development and publication of the family of *International Codes* in 2000, the continued development and maintenance of the model codes individually promulgated by BOCA (“BOCA National Codes”), ICBO (“Uniform Codes”) and SBCCI (“Standard Codes”) was discontinued. This 2003 *International Energy Conservation Code*, as well as its predecessor — the 2000 edition — is intended to be the successor energy conservation code to those codes previously developed by BOCA, ICBO and SBCCI.

The development of a single set of comprehensive and coordinated *International Codes* was a significant milestone in the development of regulations for the built environment. The timing of this publication mirrors a milestone in the change in structure of the model codes, namely, the pending Consolidation of BOCA, ICBO and SBCCI into the ICC. The activities and services previously provided by the individual model code organizations will be the responsibility of the Consolidated ICC.

This code is founded on principles intended to establish provisions consistent with the scope of an energy conservation code that adequately conserves energy; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.

## Adoption

The *International Energy Conservation Code* is available for adoption and use by jurisdictions internationally. Its use within a governmental jurisdiction is intended to be accomplished through adoption by reference in accordance with proceedings establishing the jurisdiction’s laws. At the time of adoption, jurisdictions should insert the appropriate information in provisions requiring specific local information, such as the name of the adopting jurisdiction. These locations are shown in bracketed words in small capital letters in the code and in the sample ordinance. The sample adoption ordinance on page v addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

## Maintenance

The *International Energy Conservation Code* is kept up to date through the review of proposed changes submitted by code enforcing officials, industry representatives, design professionals and other interested parties. Proposed changes are carefully considered through an open code development process in which all interested and affected parties may participate.

The contents of this work are subject to change both through the Code Development Cycles and the governmental body that enacts the code into law. For more information regarding the code development process, contact the Code and Standard Development Department of the International Code Council.

While the development procedure of the *International Energy Conservation Code* assures the highest degree of care, ICC and the founding members of ICC—BOCA, ICBO, SBCCI—their members, and those participating in the development of this code do not accept any liability resulting from compliance or noncompliance with the provisions because ICC and its founding members do not have the power or authority to police or enforce compliance with the contents of this code. Only the governmental body that enacts the code into law has such authority.

## Letter Designations in Front of Section Numbers

In each code development cycle, proposed changes to this code are considered at the Code Development Hearing by the International Energy Conservation Code Development Committee, whose action constitutes a recommendation to the voting membership for final action on the proposed change. Proposed changes to a code section whose number begins with a letter in brackets are considered by a different code development committee. For instance, proposed changes to code sections which have the letter [EB] in front (e.g., [EB] 101.2.2.1), are considered by the International Existing Building Code Development Committee at the Code Development Hearing. Where this designation is applicable to the entire content of a main section of the code, the designation appears at the main section number and title and is not repeated at every subsection in that section.

The content of sections in this code which begin with a letter designation is maintained by another code development committee in accordance with the following: [B] = International Building Code Development Committee; [EB] = International Existing Building Code Development Committee and [M] = International Mechanical Code Development Committee.

## Marginal Markings

Solid vertical lines in the margins within the body of the code indicate a technical change from the requirements of the 2000 edition. Deletion indicators (➡) are provided in the margin where a paragraph or item has been deleted.

## ORDINANCE

The *International Codes* are designed and promulgated to be adopted by reference by ordinance. Jurisdictions wishing to adopt the 2003 *International Energy Conservation Code* as an enforceable regulation governing energy efficient building envelopes and installation of energy efficient mechanical, lighting and power systems should ensure that certain factual information is included in the adopting ordinance at the time adoption is being considered by the appropriate governmental body. The following sample adoption ordinance addresses several key elements of a code adoption ordinance, including the information required for insertion into the code text.

### SAMPLE ORDINANCE FOR ADOPTION OF THE *INTERNATIONAL ENERGY CONSERVATION CODE* ORDINANCE NO. \_\_\_\_\_

An ordinance of the [JURISDICTION] adopting the 2003 edition of the *International Energy Conservation Code*, regulating and governing energy efficient building envelopes and installation of energy efficient mechanical, lighting and power systems in the [JURISDICTION]; providing for the issuance of permits and collection of fees therefor; repealing Ordinance No. \_\_\_\_\_ of the [JURISDICTION] and all other ordinances and parts of the ordinances in conflict therewith.

The [GOVERNING BODY] of the [JURISDICTION] does ordain as follows:

**Section 1.** That a certain document, three (3) copies of which are on file in the office of the [TITLE OF JURISDICTION'S KEEPER OF RECORDS] of [NAME OF JURISDICTION], being marked and designated as the *International Energy Conservation Code*, 2003 edition, including the Appendix [FILL IN THE APPENDIX DETAILS BEING ADOPTED], as published by the International Code Council, be and is hereby adopted as the Energy Conservation Code of the [JURISDICTION], in the State of [STATE NAME] for regulating and governing energy efficient building envelopes and installation of energy efficient mechanical, lighting and power systems as herein provided; providing for the issuance of permits and collection of fees therefor; and each and all of the regulations, provisions, penalties, conditions and terms of said Energy Conservation Code on file in the office of the [JURISDICTION] are hereby referred to, adopted, and made a part hereof, as if fully set out in this ordinance, with the additions, insertions, deletions and changes, if any, prescribed in Section 2 of this ordinance.

**Section 2.** The following sections are hereby revised:

Section 101.1. Insert: [NAME OF JURISDICTION].

**Section 3.** That Ordinance No. \_\_\_\_\_ of [JURISDICTION] entitled [FILL IN HERE THE COMPLETE TITLE OF THE ORDINANCE OR ORDINANCES IN EFFECT AT THE PRESENT TIME SO THAT THEY WILL BE REPEALED BY DEFINITE MENTION] and all other ordinances or parts of ordinances in conflict herewith are hereby repealed.

**Section 4.** That if any section, subsection, sentence, clause or phrase of this ordinance is, for any reason, held to be unconstitutional, such decision shall not affect the validity of the remaining portions of this ordinance. The [GOVERNING BODY] hereby declares that it would have passed this ordinance, and each section, subsection, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses and phrases be declared unconstitutional.

**Section 5.** That nothing in this ordinance or in the Energy Conservation Code hereby adopted shall be construed to affect any suit or proceeding impending in any court, or any rights acquired, or liability incurred, or any cause or causes of action acquired or existing, under any act or ordinance hereby repealed as cited in Section 2 of this ordinance; nor shall any just or legal right or remedy of any character be lost, impaired or affected by this ordinance.

**Section 6.** That the [JURISDICTION'S KEEPER OF RECORDS] is hereby ordered and directed to cause this ordinance to be published. (An additional provision may be required to direct the number of times the ordinance is to be published and to specify that it is to be in a newspaper in general circulation. Posting may also be required.)

**Section 7.** That this ordinance and the rules, regulations, provisions, requirements, orders and matters established and adopted hereby shall take effect and be in full force and effect [TIME PERIOD] from and after the date of its final passage and adoption.

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## CHAPTER 1

# ADMINISTRATION

### SECTION 101 GENERAL

**101.1 Title.** These regulations shall be known as the *Energy Conservation Code* of [NAME OF JURISDICTION], and shall be cited as such. It is referred to herein as "this code."

**101.2 Scope.** This 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 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.

**Exception:** Energy conservation systems and components in existing buildings undergoing repair, alteration or additions, and change of occupancy, shall be permitted to comply with the *International Existing Building Code*.

**101.2.1 Exempt buildings.** Buildings and structures indicated in Sections 101.2.1.1 and 101.2.1.2 shall be exempt from the building envelope provisions of this 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<sup>2</sup>) or 1.0 watt per square foot (10.7 W/m<sup>2</sup>) 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.

**101.2.2 Applicability.** The provisions of this 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 specify different materials, methods of construction or other requirements, the most restrictive shall govern.

**[EB] 101.2.2.1 Existing installations.** Except as otherwise provided for in this chapter, a provision in this 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.

**[EB] 101.2.2.2 Additions, alterations or repairs.** Additions, alterations, renovations or repairs to a building en-

velope, mechanical, service water-heating, electrical distribution or illumination system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing system to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause any one of the aforementioned and existing systems to become unsafe, hazardous or overloaded.

**[EB] 101.2.2.3 Historic buildings.** The provisions of this 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.

**[EB] 101.2.2.4 Change in occupancy.** It shall be unlawful to make a change in the occupancy of any building or structure which would result in an increase in demand for either fossil fuel or electrical energy supply unless such building or structure is made to comply with the requirements of this code or otherwise approved by the authority having jurisdiction. The code official shall certify that such building or structure meets the intent of the provisions of law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any increase in demand for either fossil fuel or electrical energy supply or any hazard to the public health, safety or welfare.

**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, regardless of the number of floors that are classified as residential occupancy.

**101.3 Intent.** The provisions of this 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 is not intended to abridge safety, health or environmental requirements under other applicable codes or ordinances.

**101.4 Compliance.** Compliance with this 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) or as specified by acceptable practice (Chapter 8) shall be used as the basis for compliance assessment.

## 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.

**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<sup>2</sup>) 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.

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 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 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 <sup>a</sup>	SINGLE GLAZED	DOUBLE GLAZED
Metal without thermal break:		
Curtain 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
	WITH STORM DOOR	WITHOUT STORM DOOR
Steel doors (1.75 inches thick)	0.35	0.60
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.

**102.5.3 Duct distribution systems insulation.** A thermal resistance (*R*) identification mark shall be applied by the manufacturer in maximum intervals of no greater than 10 feet (3048 mm) to insulated flexible duct products showing the thermal performance *R*-value for the duct insulation itself (excluding air films, vapor retarders or other duct components).

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

**103.1 General.** The provisions of this 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 shall be determined through the use of computer software, worksheets, compliance manuals and other similar materials when they have been approved by the code official as meeting the intent of this code.

**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 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.
2. For residential buildings having a conditioned floor area of 5,000 square feet (465 m<sup>2</sup>) 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 and relevant laws, ordinances, rules and regulations, as determined by the code official.

## SECTION 105 INSPECTIONS

**105.1 General.** Construction or work for which a permit is required shall be subject to inspection by the code official.

**105.2 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.

**105.3 Final inspection.** There shall be a final inspection and approval for buildings when completed and ready for occupancy.

**105.4 Reinspection.** A structure shall be reinspected when determined necessary by the code official.

## SECTION 106 VALIDITY

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

## SECTION 107 REFERENCED STANDARDS

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

**107.2 Conflicting requirements.** When a section of this 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 shall apply.

## CHAPTER 2

# DEFINITIONS

### SECTION 201 GENERAL

**201.1 Scope.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings indicated in this chapter.

**201.2 Interchangeability.** Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

**201.3 Terms defined in other codes.** Where terms are not defined in this code and are defined in the *International Building Code*, *ICC Electrical Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code* or the *International Plumbing Code*, such terms shall have meanings ascribed to them as in those codes.

**201.4 Terms not defined.** Where terms are not defined through the methods authorized by this section, such terms shall have ordinarily accepted meanings such as the context implies.

### SECTION 202 GENERAL DEFINITIONS

**ACCESSIBLE (AS APPLIED TO EQUIPMENT).** Admitting close approach because not guarded by locked doors, elevation or other effective means (see "Readily accessible").

**ADDITION.** An extension or increase in the height, conditioned floor area or conditioned volume of a building or structure.

**AIR TRANSPORT FACTOR.** The ratio of the rate of useful sensible heat removal from the conditioned space to the energy input to the supply and return fan motor(s), expressed in consistent units and under the designated operating conditions.

**ALTERATION.** Any construction, renovation or change in a mechanical system that involves an extension, addition or change to the arrangement, type or purpose of the original installation.

**ANNUAL FUEL UTILIZATION EFFICIENCY (AFUE).** The ratio of annual output energy to annual input energy which includes any nonheating season pilot input loss, and for gas or oil-fired furnaces or boilers, does not include electrical energy.

**APPROVED.** Approved by the code official or other authority having jurisdiction as the result of investigation and tests conducted by said official or authority, or by reason of accepted principles or tests by nationally recognized organizations.

**AUTOMATIC.** Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature or mechanical configuration (see "Manual").

**BASEMENT WALL.** The opaque portion of a wall which encloses one side of a basement and having an average be-

low-grade area greater than or equal to 50 percent of its total wall area, including openings (see "Gross area of exterior walls").

**BTU.** Abbreviation for British thermal unit, which is the quantity of heat required to raise the temperature of 1 pound (0.454 kg) of water 1°F ( $\Delta 0.56^{\circ}\text{C}$ ), (1 Btu = 1,055 J).

**BUILDING.** Any structure occupied or intended for supporting or sheltering any use or occupancy.

**BUILDING ENVELOPE.** The elements of a building which enclose conditioned spaces through which thermal energy is capable of being transferred to or from the exterior or to or from spaces exempted by the provisions of Section 101.2.1.

**CODE OFFICIAL.** The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

**COEFFICIENT OF PERFORMANCE (COP)—COOLING.** The ratio of the rate of heat removal to the rate of energy input in consistent units, for a complete cooling system or factory-assembled equipment, as tested under a nationally recognized standard or designated operating conditions.

**COEFFICIENT OF PERFORMANCE (COP)—HEAT PUMP—HEATING.** The ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump system under designated operating conditions. Supplemental heat shall not be considered when checking compliance with the heat pump equipment (COPs listed in the tables in Sections 503 and 803).

**COMFORT ENVELOPE.** The areas defined on a psychrometric chart and enclosing the range of operative temperatures and humidities for both the winter and summer comfort zones as depicted in Figure 2 of ASHRAE 55.

**COMMERCIAL BUILDING.** All buildings other than detached one- and two-family dwellings, townhouses and residential buildings, Groups R-2 and R-4.

**CONDENSER.** A heat exchanger designed to liquefy refrigerant vapor by removal of heat.

**CONDENSING UNIT.** A specific refrigerating machine combination for a given refrigerant, consisting of one or more power-driven compressors, condensers, liquid receivers (when required), and the regularly furnished accessories.

**CONDITIONED FLOOR AREA.** The horizontal projection of that portion of interior space which is contained within exterior walls and which is conditioned directly or indirectly by an energy-using system.

**CONDITIONED SPACE.** A heated or cooled space, or both, within a building and, where required, provided with humidification or dehumidification means so as to be capable of maintaining a space condition falling within the comfort envelope set forth in ASHRAE 55.