

CHAPTER 13

ENERGY EFFICIENCY

SUBCHAPTER 13-1

ADMINISTRATION AND ENFORCEMENT

SECTION 13-100

GENERAL

13-100.1 Title. This chapter shall be known as the *Florida Energy Efficiency Code for Building Construction*, and may be cited as such. It will be referred to herein as “the code” or “this code.”

13-100.2 Intent. The provisions of this code shall regulate (1) the design of building envelopes for adequate thermal resistance and low air leakage and (2) the design and selection of mechanical, electrical, and illumination systems and equipment which will enable the effective use of energy in new building construction, additions, alterations or any change in building configuration.

It is intended that these provisions provide flexibility to permit the use of innovative approaches and techniques to achieve effective utilization of energy. These provisions are structured to permit compliance with the intent of this code by the following design paths as applicable for the type of construction and date permitted.

1. Subchapter 13-4, Commercial Building Compliance Methods.
2. Subchapter 13-6, Residential Building Compliance Methods.

Compliance with these paths meets the intent of this chapter as allowed by Sections 101.1 and 101.2 of this chapter.

This code is not intended to abridge any safety or health requirements mandated under any other applicable codes or ordinances.

SECTION 13-101

SCOPE

13-101.0 General. This code is a statewide uniform code and shall not be made more stringent or lenient by local government. The code provides for a uniform standard of energy efficiency by, at a minimum, setting forth minimum requirements for exterior envelopes, lighting, electrical distribution, and selection of heating, lighting, ventilating, air conditioning and service water heating systems. It shall apply to all new buildings, to additions to existing buildings and manufactured homes, to renovations to existing buildings, both public and private, with certain exceptions, to changes of occupancy type, to the site-installed components and features of manufactured homes at their first set-up, and to the installation or replacement of building systems and components with new products for which thermal efficiency standards are set by this code. New buildings, with the exception of those exempted below, and in

accordance with the specific exceptions of individual sections shall be designed to comply with Subchapter 13-4 or 13-6 of this code.

13-101.1 Commercial buildings.

13-101.1.1 New construction.

Subchapter 13-4, Commercial building compliance methods. Commercial buildings of any size and multiple-family residential buildings greater than three stories shall comply with Subchapter 13-4 of the code.

This chapter contains three compliance methods:

Method A: Whole Building Performance Method

Method B: Building Envelope Trade-off Method

Method C: Buildings Prescriptive Envelope Method

13-101.1.2 Additions. Additions to existing commercial buildings are considered new building construction and shall comply with Subchapter 13-4 of this code as allowed in Section 101.1.1.

Additions to existing nonresidential buildings that are unable to comply with code requirements for the addition alone may comply with the code by bringing the entire building into compliance with the requirements for new buildings.

13-101.1.3 Renovations. Renovated commercial buildings shall, when applicable (see Section 202), comply with the prescriptive requirements contained in Form 400C or with Method B of Subchapter 13-4 for insulation, HVAC systems, lighting, water heating systems and exterior envelope components being retrofitted or replaced.

13-101.1.4 Buildings with multiple occupancy types. When a building contains more than one occupancy type, each portion of the building shall conform to the requirements for the occupancy housed therein.

Exceptions:

1. Where minor occupancy use does not occupy more than 5 percent of the floor area of the building, the major use shall be considered the building occupancy.
2. Residential dwelling units such as congregate living facilities that are part of a larger commercial occupancy type and are three stories or less may comply with Subchapter 13-4.

13-101.1.5 Limited or special use buildings. Buildings determined by the Florida Building Commission to have a limited energy use potential based on size, configuration or time occupied, or to have a special use requirement shall be

considered limited or special use buildings and shall comply with the code by Method C of Subchapter 13-4. Code compliance requirements shall be adjusted by the commission to handle such cases when warranted.

13-101.1.6 Shell buildings. Nonresidential buildings that are permitted prior to design completion or which will be finished in sections at a time after construction of the shell shall comply with either Method B or C of Subchapter 13-4 of the code prior to granting of a permit to build. All assumptions made about features not installed until later that are not on the building plans shall be listed and appended to the compliance form submitted to the building department. Unless the building is completed as per all assumptions made in the original code compliance submittal, a revised code submittal(s) using Methods A, B or C shall be submitted when completion of the building (or part of the building) is permitted.

13-101.2 Residential buildings.

13-101.2.1 New construction. New residential construction shall comply with this code by using the following compliance methods.

Subchapter 13-4, Commercial buildings compliance methods. Multiple-family buildings greater than three stories shall comply with Subchapter 13-4 of the code.

Subchapter 13-6, Residential buildings compliance methods. Single-family residential buildings and Multiple-family buildings of three stories or less shall comply with this chapter of the code. This subchapter contains three compliance methods:

Method A: Whole Building Performance Method

Method B: Component Prescriptive Method

Method C: Limited Applications Prescriptive Method

13-101.2.2 Additions. Additions to existing residential buildings shall be considered new building construction and shall comply with the requirements of either Method A, B, or C of Subchapter 13-6, as applicable. Additions to residential buildings over three stories shall comply by Subchapter 13-4.

Additions to existing residential buildings that are unable to comply with code requirements for the addition alone may comply with the code by bringing the entire building into compliance with the requirements for new buildings given in Section 101.4.2.

13-101.2.3 Renovations. Renovated buildings shall, when applicable (see Section 202), meet the prescriptive requirements contained in Method C of Subchapter 13-6 for residential applications of the code for insulation, HVAC systems, lighting, water heating systems and exterior envelope for those components being retrofitted or replaced.

13-101.2.4 Manufactured homes. Site-installed components of manufactured homes and residential manufactured buildings shall meet the prescriptive requirements contained in Method C of Subchapter 13-6 for those components.

13-101.2.5 Buildings permitted together.

13-101.2.5.1 Residences in which two buildings are permitted together that are not connected by conditioned space shall be considered separate residences for the purposes of compliance with this code if the following conditions apply:

1. The secondary building has its own bathroom and kitchenette or bar; and
2. The secondary building is heated and/or cooled by a separate heating and/or cooling system.

13-101.2.5.2 Conditioned workrooms, exercise rooms, play rooms, pool rooms and similar types of rooms that are separated from the main residence and do not meet the conditions in Section 101.2.5.1 shall use Subchapter 13-4 to demonstrate compliance with this code.

Exception: If a workroom or other room is separated from the main residence only by enclosed unconditioned space and is heated or cooled by the same system(s) as the primary building, it shall comply with this code as part of the primary building.

13-101.3 Changes of occupancy type.

13-101.3.1 Buildings having a change of occupancy type that were permitted prior to March 15, 1979, shall meet the requirements for renovations in Section 101.1.3 or Section 101.2.3, as appropriate, for those components which are being retrofitted or replaced.

13-101.3.2 Buildings having a change of occupancy type that were permitted after March 15, 1979, shall comply with the requirements of Subchapter 13-4 for commercial applications and multiple-family residential buildings greater than three stories or Subchapter 13-6 for residential applications of three stories or less. Where the efficiency of a building component is unknown, it shall be determined in accordance with the criteria specified in Section 101.4.2.1.

13-101.4 Existing buildings.

13-101.4.1 Existing buildings not previously conditioned.

13-101.4.1.1 Previously unconditioned existing buildings which were permitted prior to March 15, 1979 to which heating or cooling systems are added shall meet the prescriptive requirements contained in Methods B or C of Subchapter 13-4 for commercial applications and Method C of Subchapter 13-6 for residential applications of the code for insulation, HVAC system(s), water heating system and/or exterior envelope for those components which are being retrofitted or replaced.

13-101.4.1.2 Existing buildings which were permitted after March 15, 1979 as unconditioned space to which comfort conditioning is added shall be considered additions and shall be brought into full compliance with this code.

13-101.4.2 Nonexempt existing buildings. Existing buildings not exempt from the provisions of this code (see Section 101.5.1), for either the entire building or an addition to the building, that are unable to meet one or more current prescriptive code minimum requirements may be exempt from those minimum requirements if the entire building is

brought into compliance with the following chapters and the assumptions in Section 101.4.2.1 are used:

1. Commercial buildings and residential buildings greater than three stories: Method A of Subchapter 13-4.
2. Single-family residential buildings and multiple-family buildings of three or less stories: Method A of Subchapter 13-6.

13-101.4.2.1 Assumptions for existing building efficiencies. The following restrictions apply if the entire building is used to demonstrate code compliance:

1. The owner shall demonstrate to the building department's satisfaction that all *R*-values and equipment efficiencies claimed are present. If the building was built after 1980, the original energy code submittal may be used to demonstrate efficiencies.
2. If it is apparent from inspection that no insulation is present in the existing walls, floors or ceilings, or if inspection is not possible, an *R*-value of zero (0) shall be used for that component in the calculation. If as part of the addition and renovation project, insulation or equipment in the existing structure is upgraded, the new values may be used in the calculation. Multipliers for insulation levels not on Form 600A may be found in Section 2.0 of Appendix 13-C to this chapter.
3. If, upon inspection, insulation is found but the *R*-value is unknown, then an *R*-value shall be determined by an energy audit utilizing current acceptable practice based on insulation thickness, density and type.
4. Equipment efficiencies shall be demonstrated, either from manufacturer's literature or certified equipment directories, or by the procedure provided in Section 407.1.ABC.3 or Section 607.1.ABC.3 based on system capacity and total on-site energy input. Equipment to be added shall meet the applicable minimum equipment efficiency from Tables 407.1.ABC.3.2A through 407.1.ABC.3.2D and 408.1.ABC.3.2E through 408.1.ABC.3.2G for commercial occupancies and from Tables 607.1.ABC.3.2A through 607.1.ABC.3.2D and 608.1.ABC.3.2E through 608.1.ABC.3.2F for residential occupancies. Existing equipment efficiencies not meeting the values given in Tables 407.1.ABC.3.2A through 407.1.ABC.3.2D and 408.1.ABC.3.2E through 408.1.ABC.3.2G for commercial occupancies shall utilize the cooling or heating system multipliers provided by FLA/COM. Existing residential equipment not meeting the efficiencies in Tables 607.1.ABC.3.2A through 607.1.ABC.3.2D and 608.1.ABC.3.2E through 608.1.ABC.3.2F shall utilize the cooling or heating system multipliers provided in Tables 6-16 to 6-17 of Appendix C to this chapter. Residential ducts with less than R-4.2

insulation shall use the multipliers provided in Tables 6-18 to 6-20 in Appendix 13-C to this chapter.

5. Any nonvertical roof glass shall be calculated as horizontal glazing.

13-101.5 Exempt buildings. Buildings exempt from compliance with this chapter include those described in Sections 101.5.1 through 101.5.7.

13-101.5.1 Existing buildings except those considered renovated buildings, changes of occupancy type, or previously unconditioned buildings to which comfort conditioning is added.

13-101.5.2 Any building or portion thereof whose peak design rate of energy usage for all purposes is less than 1 watt (3.4 British thermal units per hour) per square foot of floor area for all purposes.

13-101.5.3 Any building which is neither heated nor cooled by a mechanical system designed to control or modify the indoor temperature and powered by electricity or fossil fuels. Such buildings shall not contain electrical, plumbing or mechanical systems which have been designed to accommodate the future installation of heating or cooling equipment.

13-101.5.4 Any building for which federal mandatory standards preempt state energy codes.

13-101.5.5 Any historical building as described in Section 267.021, Florida Statutes.

13-101.5.6 Any building of less than 1,000 square feet (93 m²) whose primary use is not as a principal residence and which is constructed and owned by a natural person for hunting or similar recreational purposes; however, no such person may build more than one exempt building in any 12-month period.

13-101.5.7 Any building where heating or cooling systems are provided which are designed for purposes other than general space comfort conditioning. Buildings included in this exemption include:

1. Buildings containing a system(s) designed and sold for dehumidification purposes only and controlled only by a humidistat. No thermostat shall be installed on systems thus exempted from this code.
2. Commercial service areas where only ceiling radiant heaters or spot coolers are to be installed which will provide heat or cool only to a single work area and do not provide general heating or cooling for the space.
3. Buildings heated with a system designed to provide sufficient heat only to prevent freezing of products or systems. Such systems shall not provide heating above 50°F (10°C).
4. Pre-manufactured freezer or refrigerated storage buildings and areas where the temperature is set below 40°F (4°C) and in which no operators work on a regular basis.
5. Electrical equipment switching buildings which provide space conditioning for equipment only and in which no operators work on a regular basis.

13-101.6 Building systems. Thermal efficiency standards are set for the following building systems where new products are installed or replaced in existing buildings, and for which a permit must be obtained. Such systems shall meet the minimum efficiencies allowed for that system on Form 400C for commercial buildings and on Form 600C for residential buildings.

1. Heating, ventilating or air conditioning systems;
2. Service water or pool heating systems;
3. Electrical systems and motors;
4. Lighting systems.

Exceptions:

1. Where part of a functional unit is repaired or replaced. For example, replacement of an entire HVAC system is not required because a new compressor or other part does not meet code when installed with an older system.
2. Where existing components are utilized with a replacement system, such as air distribution system ducts or electrical wiring for lights, such components or controls need not meet code if meeting code would require that component's replacement.
3. Replacement equipment that would require extensive revisions to other systems, equipment or elements of a building where such replacement is a like-for-like replacement, such as through-the-wall condensing units and PTACs, chillers, and cooling towers in confined spaces.
4. HVAC equipment sizing calculations are not required for systems installed in existing buildings not meeting the definition of renovation in Section 202.

SECTION 13-102 MATERIALS AND EQUIPMENT

13-102.1 Efficiency and maintenance information. An operating and maintenance manual shall be provided to the building owner for all commercial buildings. The manual shall include basic data relating to the design, operation and maintenance of HVAC systems and equipment. Required routine maintenance actions shall be clearly identified. Where applicable, HVAC controls information such as diagrams, schematics, control sequence descriptions, and maintenance and calibration information shall be included. Operations manuals shall be available for inspection by the building official upon request. See Sections 413.1.ABC.2.2 and 410.1.ABC.4.2.

13-102.2 Alternate materials—Method of construction, design or insulating systems. 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 building official and the Florida Building Commission as meeting the intent of the code. This clause shall not allow disregard of any provision(s) of the code by building departments, nor shall it prevent

uniform statewide implementation of the code as required by Florida law (see Section 553.901, Florida Statutes).

13-102.3 Air conditioners sold or installed in Florida. All air conditioners installed in new or renovated buildings in the State of Florida shall comply with requirements set forth in Subchapters 13-4 or 13-6, as applicable.

SECTION 103 CODE COMPLIANCE AND PERMITTING

103.0 General. Code compliance for all buildings shall be certified by use of approved forms for the compliance method chosen that are specific to the climate zone in which the building will be located (see Figure 1-1).

The only software approved for determining compliance with this code shall be the software developed and maintained by the Florida Building Commission or its designated representative.

Worst-case calculations may be submitted for identical buildings facing different cardinal directions; however, original code certification signatures shall be provided for each building.

103.1 Certification of compliance. Code compliance for non-residential and multiple-family residential applications (except for duplexes, townhouses, or other buildings identified in Sections 481.229 and 471.003, *Florida Statutes*) shall be certified by the owner, project architect (registered in the state of Florida), or other officially designated agent allowed in Section 103.2.

13-103.1.1 Code compliance preparation. The person preparing the compliance calculation shall certify that the plans and specifications covered by the calculation, or amendments thereto, are in compliance with Chapter 13 of the *Florida Building Code*.

13-103.1.1.1 Commercial applications. Completion of procedures demonstrating compliance with this code for commercial buildings shall be signed and sealed by an architect or engineer licensed to practice in the state of Florida, with the exception of buildings excluded by Section 481.229, *Florida Statutes*, or Section 471.003, *Florida Statutes*. Calculations for buildings falling within the exception of Section 471.003, *Florida Statutes*, may be performed by air conditioning or mechanical contractors licensed in accordance with Chapter 489, *Florida Statutes*, or by state of Florida certified commercial building energy raters.

Design professionals responsible under Florida law for the design of lighting, electrical, mechanical, and plumbing systems and the building shell, shall certify compliance of those building systems with the code by signing and providing their professional registration number on the energy code form provided as part of the plans and specifications to the building department.

Exception: Typed names and registration numbers may be provided in lieu of a signature where all rele-

vant information has been included on signed and sealed plans.

13-103.1.1.2 Residential applications.

13-103.1.1.2.1 Single-family residential, duplexes, townhouses. No license or registration is required to prepare the code compliance form for single-family residential dwellings, duplexes and townhouses.

13-103.1.1.2.2 Multiple-family residential. Form preparation for multiple-family dwellings except duplexes and townhouses shall be signed and sealed by an architect or engineer registered in the state of Florida, with the exception of buildings excluded by Section 481.229, *Florida Statutes*, or Section 471.003, *Florida Statutes*. Calculations for buildings falling within the exception of Section 471.003, *Florida Statutes*, may be performed by air conditioning or mechanical contractors licensed in accordance with Chapter 489, *Florida Statutes*, by state of Florida certified commercial building energy raters.

13-103.1.2 Code compliance certification. The building's owner, the owner's architect, or other authorized agent legally designated by the owner shall certify that the building is in compliance with the code, as per Section 553.907, *Florida Statutes*, prior to receiving the permit to begin construction or renovation.

If, during the building's construction or renovation, alterations are made in the building's design or in materials or equipment installed in the building which would diminish its energy performance, an amended copy of the compliance certification shall be submitted to the building official on or before the date of final inspection by the building owner or his or her legally authorized agent.

13-103.2 Details, plans and specifications. Plans and specifications shall be submitted with each application for a building permit. Energy code calculations shall be made a part of the plans and specifications of the building. The building official shall require, subject to the exceptions in Section 481.229, *Florida Statutes*, and Section 471.003, *Florida Statutes*, that plans and specifications be prepared by an engineer or architect licensed to practice in the state of Florida. The plans and specifications, including the energy code calculations, shall show, in sufficient detail, all 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*-values of the envelope systems, *R*-values of insulating materials, size and type of apparatus and equipment, equipment and systems controls and other pertinent data to indicate conformance with the requirements of the code.

13-103.3 Building permits. Prior to receiving the permit to begin construction or renovation, owners, or an agent duly designated by the owner, of all buildings shall certify energy code compliance to the designated local enforcement agency. If, during the building construction or renovation, alterations are made in the design, materials, or equipment which would diminish the energy performance of the building, an amended copy of the compliance certifications shall be submitted to the

local enforcement agency on or before the date of final inspection by the building owner or his or her agent.

Building officials or their officially designated representatives shall assure that the compliance forms are complete and without gross errors.

SECTION 13-104 INSPECTIONS

13-104.1 General. All construction or work for which a permit is required shall be subject to inspection by the building official or his or her officially designated representative.

13-104.2 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 building official. No construction shall be concealed without inspection approval.

13-104.3 Inspections required. There shall be a final inspection for code compliance on all buildings when completed and ready for occupancy.

13-104.4 Information cards required.

13-104.4.1 Energy performance level (EPL) display card. The building official shall require that an energy performance level (EPL) display card be completed and certified by the builder to be accurate and correct before final approval of the building for occupancy. Florida law (Section 553.9085, *Florida Statutes*) requires the EPL display card to be included as an addendum to each sales contract executed after January 1, 1994, for both presold and nonpresold residential buildings.

The EPL display card contains information indicating the energy performance level and efficiencies of components installed in a dwelling unit. The building official shall verify that the EPL display card completed and signed by the builder accurately reflects the plans and specifications submitted to demonstrate code compliance for the building.

13-104.4.2 HVAC efficiency card. The building official shall require that a completed HVAC efficiency card signed by a representative of the heating and cooling equipment contractor be posted in a prominent location on the cabinet of the indoor air handler or furnace of each heating or heating and cooling system installed in the building at the time of installation. Where single package units are installed, the card shall be posted on the unit itself. The card shall be durable, readable and shall contain the following information:

1. Manufacturer's name(s);
2. Brand name(s);
3. Model numbers of the furnace, compressor unit, and air handler (and evaporator coil, if the air handler can be equipped with more than one coil) for each system installed;
4. Efficiency ratings of the combined equipment for each system actually installed;
5. Name and address of the heating and or cooling company installing the equipment;

6. Signature line and date line, preceded by the statement, "With the authorization of the installing contractor I certify that the information entered on this card accurately represents the system installed."
7. Signature line and date line, preceded by the statement, "As the building official or the representative of the building official I certify that the information entered on this card accurately represents the system installed."

Exceptions:

1. If the information required above has been previously submitted and is included on the plans required at the building site, the HVAC efficiency card need not be provided. However, the plans shall be signed by a representative of the heating and cooling company installing the equipment and shall be available for inspection by building inspectors and by prospective buyers until the time of title transfer.
2. The Federal Trade Commission's energy guide label may be used to fulfill this requirement.

13-104.4.3 Insulation certification card. In cases where the *R*-value of insulation installed in either walls, ceilings or floors is not readily apparent, the local building official shall require that an *R*-value certification card signed by the insulation contractor be posted in a prominent location at the time of installation. The card shall contain, at a minimum, the following information:

1. Insulation manufacturer's name;
2. Insulation type;
3. *R*-value of insulation installed;
4. Thickness of insulation installed;
5. Location of insulation installed;
6. Indication that the installation has been checked and does not block attic ventilation.
7. Name and address of the contractor installing the insulation;
8. Date of installation.

13-104.4.4 Energy guide labels. Energy guide labels required by the U.S. Federal Trade Commission for heating and cooling systems, water heaters and other appliances covered by federal law shall remain on those appliances until time of title transfer.

13-104.4.5 Fenestration energy rating labels. Energy performance values (i.e., *U*-factor, solar heat gain coefficient) of fenestration products (i.e., windows, doors and skylights) shall be determined by an accredited, independent laboratory and labeled and certified by the manufacturer. Such certified and labeled fenestration energy ratings shall be accepted for the purposes of determining compliance with the building envelope requirements of this code.

Where the specified energy performance (*U*-factor or SHGC) of the fenestration product is not labeled nor readily apparent, the default procedures outlined in Tables B-6, B-7 and B-8 of Appendix B for *U*-factor and SHGC shall be used to determine code compliance for commercial applica-

tions and in Section 601.1.ABC.1 for residential applications. 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 are used, the product shall be assigned the worst value.

U-factors (thermal transmittances) of fenestration products (windows, doors and skylights) shall be determined by an accredited, independent laboratory in accordance with NFRC 100: *Procedure for Determining Fenestration Product U-Factors*. The SHGC for glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200: *Procedure for Determining Fenestration Product Solar Heat Gain Coefficients at Normal Incidence*.

**SECTION 13-105
REPORTING**

13-105.0 Reporting to the department of community affairs. A reporting form shall be submitted to the local building department by the owner or owner's agent with the submittal certifying compliance with this code. Reporting forms shall be a copy of the front page of the form applicable for the code chapter under which compliance is demonstrated.

13-105.1 Reporting schedule. It shall be the responsibility of the local building official to forward the reporting section of the proper form to the Department of Community Affairs on a quarterly basis as per the reporting schedule in Table 13-105.1.

**TABLE 13-105.1
REPORTING SCHEDULE**

	Group I*	Group II*	Group III*
Quarter 1	12/31	1/31	2/28
Quarter 2	3/31	4/30	5/31
Quarter 3	6/30	7/31	8/31
Quarter 4	9/30	10/31	11/30

*See Appendix A of this chapter for group designations.

13-105.2 Jurisdiction numbers. For data collection purposes, all permitting jurisdictions in the state of Florida have been assigned a six-digit jurisdiction number. The jurisdiction number is required on all energy code forms. Jurisdiction numbers are listed by county in Appendix 13-A.

**SECTION 13-106
VALIDITY**

13-106.0 Validity. If any section, subsection, sentence, clause, or phrase of this code is, for any reason, held to be invalid for any reason, such decision shall not affect the validity of the remaining portions of this code.

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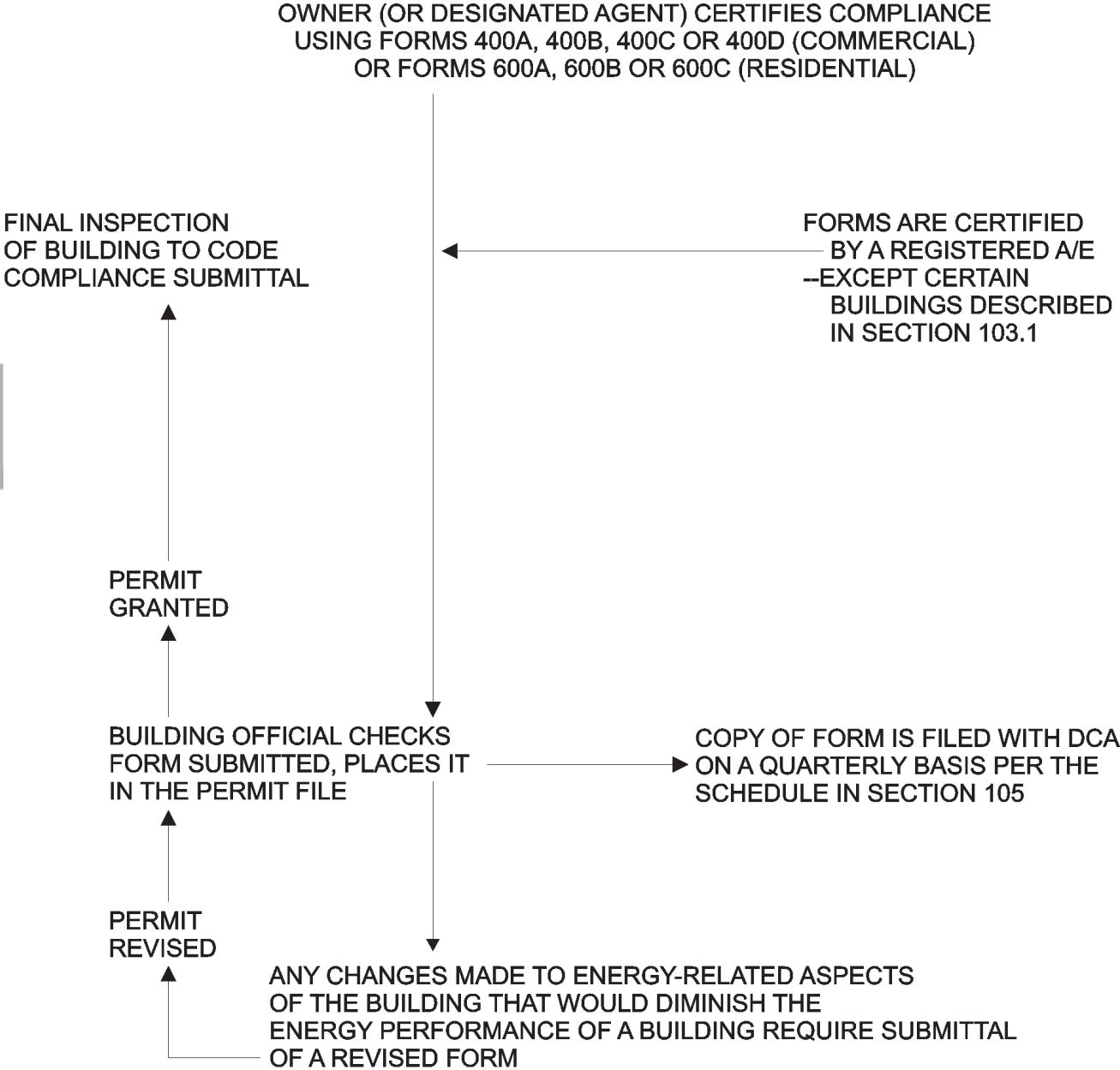


FIGURE 1-1
CODE COMPLIANCE CHART

FIGURE 1-1
CODE COMPLIANCE CHART

FLOIDA BUILDING CODE

2nd DRAFT

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SUBCHAPTER 13-2

DEFINITIONS

SECTION 13-201 GENERAL

13-201.1 Application of terms . For the purpose of this code, certain abbreviations, terms, phrases, words, and their derivatives, shall be construed as set forth in this chapter.

13-201.2 Words not defined. Words not defined herein shall have the meanings stated in the *Webster's Ninth New Collegiate Dictionary*, as revised.

SECTION 13-202 DEFINITIONS

ABOVE-GRADE WALL. See "Wall."

ACCESS HATCH. See "Door."

ACCESSIBLE (as applied to equipment). Admitting close approach; not guarded by locked doors, elevation or other effective means (see "Readily accessible").

ADDITION. An extension or increase in conditioned floor area or height of a building or structure.

ADJACENT WALL, CEILING or FLOOR. A wall, ceiling or floor of a structure that separates conditioned space from enclosed but unconditioned space, such as an unconditioned attached garage, storage or utility room.

ADJUSTED LIGHTING POWER (ALP). Lighting power, assigned to a luminaire(s), that has been reduced by deducting a lighting power control credit based on use of an automatic control device(s).

AEROSOL SEALANT. A closure product for duct and plenum systems, which is delivered internally to leak sites as aerosol particles using a pressurized air stream.

AFUE (ANNUAL FUEL UTILIZATION EFFICIENCY). The ratio of annual output energy to annual input energy including any nonheating season pilot input loss.

AIR BARRIER. Relating to air distribution systems, a material object(s) which impedes or restricts the free movement of air under specified conditions. For fibrous glass duct, the air barrier is its foil cladding; for flexible nonmetal duct, the air barrier is the nonporous core; and for sheet metal duct and air handling units, the air barrier is the metal in contact with the air stream. For mechanical closets, the air barrier may be a uniform panelized material such as gypsum wall board which meets ASTM C 36, or it may be a membrane which alone acts as an air barrier which is attached to a panel, such as the foil cladding of fibrous glass duct board.

Relating to the building envelope, air barriers comprise the planes of primary resistance to air flow between the interior spaces of a building and the outdoors and the planes of primary air flow resistance between adjacent air zones of a building, including planes between adjacent conditioned and uncondi-

tioned air spaces of a building. To be classed as an air barrier, a building plane must be substantially leak free; that is, it shall have an air leakage rate not greater than 0.5 cfm/ft² when subjected to an air pressure gradient of 25 pascal. In general, air barriers are made of durable, nonporous materials and are sealed to adjoining wall, ceiling or floor surfaces with a suitable long-life mastic. House wraps and taped and sealed dry-wall may constitute an air barrier but dropped acoustical tile ceilings (T-bar ceilings) may not. Batt insulation facings and asphalt-impregnated fiberboard and felt paper are not considered air barriers.

AIR CONDITIONING. The process of treating air to control its temperature, humidity, cleanliness and distribution to meet requirements of the conditioned space.

AIR DISTRIBUTION SYSTEMS. Include all building elements (duct systems, air handling units, cavities of the building structure and mechanical closets) through which air is delivered to or from the conditioned spaces.

AIR DUCT. A passageway for conducting air to or from heating, cooling, air conditioning, or ventilating equipment, but not including the plenum. For material requirements see local mechanical codes.

AIR-HANDLING UNIT. The fan unit of a furnace and the fan-coil unit of a split-system, packaged air conditioner or heat pump.

AIR INFILTRATION. See "Infiltration."

AIR POROSITY. The ability to transmit air through minute openings in a substance or material.

ALTERATION. Replacement or addition to a building or its systems and equipment; routine maintenance, repair, and service or a change in the building's use classification or category shall not constitute an alteration.

ANNUAL FUEL UTILIZATION EFFICIENCY. Efficiency descriptor of the ratio of annual output energy to annual input energy as developed in accordance with the requirements of U.S. Department of Energy (DOE) 10CFR Part 430.

APPLICATION PART-LOAD VALUE (APLV). A single number part-load efficiency figure of merit calculated in accordance with the method described in ARI 550 or 590 referenced to modified rating conditions described in those standards.

AS-BUILT. Building components to be actually installed in a structure. In some cases, this may be a worst-case condition (see "Worst case").

ATTIC. An enclosed unconditioned space located immediately below an uninsulated roof and immediately above the ceiling of a building. For the roof to be considered insulated, roof insulation shall be at least the R-value required to meet section 404.2.B.1 in Subchapter 13-4 and Section 604.1.ABC.1 in Subchapter 13-6 (see "Under attic;" "Roof").

ATTIC RADIANT BARRIER. See “Radiant barrier.”

AUTHORITY HAVING JURISDICTION. The agency or agent responsible for enforcing this standard.

AUTOMATIC. Self-acting, operating by its own mechanism when actuated by some nonmanual influence, such as a change in current strength, pressure, temperature, or mechanical configuration (see “Manual”).

AUTOMATIC CONTROL DEVICE. A device capable of automatically turning loads off and on without manual intervention.

BALANCING AIR. Adjusting air flow rates through air distribution system devices, such as fans and diffusers, by manually adjusting the position of dampers, splitter vanes, extractors, etc., or by using automatic control devices, such as constant air volume or variable air volume boxes.

BALANCING, HYDRONIC. Adjusting water flow rates through hydronic distribution system devices, such as pumps and coils, by manually adjusting the position valves, or by using automatic control devices, such as automatic flow control valves.

BALLAST. A device used in conjunction with an electric discharge lamp to cause the lamp to start and operate under the proper circuit conditions of voltage, current, wave form, electrode heat, etc.

- (a) **Electronic ballast:** A ballast constructed using electronic circuitry.
- (b) **Hybrid ballast:** A ballast constructed using a combination of magnetic core and insulated wire winding and electronic circuitry.
- (c) **Magnetic ballast:** A ballast constructed with magnetic core and a winding of insulated wire.

BALLAST EFFICACY FACTOR – FLUORESCENT. The ratio of relative light output, expressed as a percent, to the power input, expressed in watts, under test conditions.

BASELINE. Building component performance target or the total building performance target which is compared with the as-built building performance.

BEDROOM. Any residential room which has an area of 70 square feet (7 m²) or more and a clothes storage closet, and is not part of the common living area. For the purposes of this code, the number of “main” bedrooms for homes of three bedrooms or more is the total number of bedrooms less one. In one and two bedroom homes, all bedrooms are “main” bedrooms.

BELOW-GRADE WALL. See “Wall.”

BOILER. A self-contained low-pressure appliance for supplying steam or hot water.

BOILER CAPACITY. The rate of heat output in Btu/h of the boiler, at the design inlet and outlet conditions and rated fuel or energy input, measured at the boiler outlet, at the design pressure and/or temperature, and rated fuel input.

BOILER, PACKAGED. A boiler that is shipped complete with heating equipment, mechanical draft equipment and automatic controls usually in one or more sections. A packaged boiler includes factory-built boilers manufactured as a unit or

system, disassembled for shipment, and reassembled at the site.

BRANCH CIRCUIT. The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s); the final wiring run to the load.

BUDGET (Baseline). Building design: a computer representation of a hypothetical design based on the actual proposed building design. This representation is used as the basis for calculating the Method A energy cost budget.

BTU (British Thermal Unit). The standard unit for measuring heat energy, such as the heat content of fuel. It is the amount of heat energy necessary to raise the temperature of one pound of water one degree Fahrenheit. 1 BTU per minute = 17.6 watts.

BTU. Per kilowatt hour (see “Heat rate”).

BUILDING. Any structure that includes provision for any of the following or any combination of the following: a space heating system, a space cooling system, or a service water heating system. For each purpose of this code each portion of a building separated from other portions by a rated fire wall shall be considered as a separate building. The term “building” shall be construed as if followed by the words “or part thereof.”

BUILDING CONSTRUCTION. Any new building or structure or addition to any existing building or structure.

BUILDING ENTRANCE. Any doorway, set of doors, turnstiles, or other form of portal that is ordinarily used to gain access to the building by its users and occupants.

BUILDING ENVELOPE. The exterior plus the semiexterior portions of a building. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Building envelope, exterior:** The elements of a building that separate conditioned spaces from the exterior.
- (b) **Building envelope, semiexterior:** The elements of a building that separate conditioned space from unconditioned space or that enclose semiheated spaces through which thermal energy may be transferred to or from the exterior, or to or from unconditioned spaces, or to or from conditioned spaces.

BUILDING EXIT. Any doorway, set of doors, or other form of portal that is ordinarily used only for emergency egress or convenience exit.

BUILDING GROUNDS LIGHTING. Lighting provided through a building’s electrical service for parking lot, site, roadway, pedestrian pathway, loading dock and security applications.

BUILDING MATERIAL. Any element of the building envelope through which heat flows and that is included in the component U-factor calculations other than air films and insulation.

BUILDING OFFICIAL. The officer or other designated representative authorized to act on behalf of the authority having jurisdiction.

BUILDING SYSTEMS. See “System.”

C-FACTOR (Thermal conductance). Time rate of steady state heat flow through unit area of a material or construction, induced by a unit temperature difference between the body surfaces. Units of C are Btu/h-ft²·°F. Note that the C-factor does not include soil or air films.

CHECK METERING. Measurement instrumentation for the supplementary monitoring of equipment and tenant energy use (electric, gas, oil, etc.) in addition to the revenue metering furnished by the utility.

CIRCUIT BREAKER. A device designed to open and close a circuit by nonautomatic means and to open the circuit automatically at a predetermined overcurrent without damage to itself when properly applied within its rating.

CLASS OF CONSTRUCTION. For the building envelope, a subcategory of roof, above-grade wall, below-grade wall, floor, slab-on-grade floor, opaque door, vertical fenestration, or skylight (see “Roof,” “Wall,” “Floor,” “Slab-on-grade floor,” “Door” and “Fenestration”).

CLERESTORY. That part of a building that rises clear of the roofs or other parts and whose walls contain windows for lighting the interior.

CODE OFFICIAL. See “Building official.”

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 refrigerating system or some specific portion of that system under designated operating conditions.

COEFFICIENT OF PERFORMANCE (COP) – (HEAT PUMP) – HEATING. Heating: the ratio of the rate of heat delivered to the rate of energy input, in consistent units, for a complete heat pump system, including the compressor and, if applicable, auxiliary heat, under designated operating conditions.

COLOR TEMPERATURE. The absolute temperature (in degrees kelvin) of an incandescent blackbody radiator that radiates light of the same color. Lower color temperatures are near the red-orange end of the spectrum. Higher color temperatures are near the blue-violet end of the spectrum.

COMBUSTION APPLIANCE, DIRECT VENT. A system consisting of: (1) an appliance for indoor installation; (2) combustion air connections between the appliance and the outdoor atmosphere; (3) flue gas connections between the appliance and the vent cap; and (4) vent cap for installation outdoors, supplied by the manufacturer and constructed so that all air for combustion is obtained from the outdoor atmosphere and all flue gases are discharged to the outdoor atmosphere.

COMFORT CONDITIONING. Treating air to control its temperature, relative humidity, cleanliness, and distribution to meet the comfort requirements of the occupants of the conditioned space.

COMFORT ENVELOPE. The area on a psychrometric chart enclosing all those conditions described as being comfortable in Figure 1, ASHRAE 55, *Thermal Environmental Comfort Conditions for Human Occupancy*.

COMMON CEILING. The ceiling/floor assembly separating conditioned tenancies, one above the other.

COMMON WALL. A wall separating conditioned tenancies, one next to the other.

CONDITIONED FLOOR AREA. The horizontal projection (outside measurements) of that portion of space which is conditioned directly or indirectly by an energy-using system (see “Floor area;” “Gross floor area”).

CONDITIONED SPACE. That volume of a structure which is either mechanically heated, cooled, or both heated and cooled by direct means. Spaces within the thermal envelope that are not directly conditioned shall be considered buffered unconditioned space. Such spaces may include, but are not limited to, mechanical rooms, stairwells, and unducted spaces beneath roofs and between floors. Air leakage into dropped ceiling cavities does not constitute conditioned space (see “Space.”)

CONDUCTANCE. See “Thermal conductance.”

CONSTRUCTION. The fabrication and erection of a new building or any addition to or alteration of an existing building.

CONSTRUCTION DOCUMENTS. Drawings and specifications used to construct a building, building systems, or portions thereof.

CONTINUOUS INSULATION (cont. ins. or ci). Insulation that is continuous across all structural members without thermal bridges other than fasteners and service openings. It is installed on the interior, exterior, or is integral to any opaque surface of the building envelope.

CONTROL. To regulate the operation of equipment.

CONTROL DEVICE. A specialized device used to regulate the operation of equipment.

CONVENTIONAL ATTIC. Traditionally, the space directly below the roof and above the ceiling of the upper story of a building.

COOL DOWN. Reduction of space temperature down to occupied set point after a period of shutdown or setup.

COOLED SPACE. See “Space.”

COOLING DEGREE DAY. See “Degree-day.”

COOLING DESIGN TEMPERATURE. The outdoor dry-bulb temperature equal to the temperature that is exceeded 1 percent of the number of hours during a typical weather year.

COOLING DESIGN WET-BULB TEMPERATURE. The outdoor wet bulb temperature for sizing cooling systems and evaporative heat rejection systems such as cooling towers.

CURRENT TRANSFORMERS. An electrical device used to convert large currents to proportionally smaller currents based on a given ratio; typically used for metering.

DAYLIGHTED SPACE. The space bounded by vertical planes rising from the boundaries of the daylighted area on the floor to the above floor or roof.

DAYLIGHTED ZONE:

Under skylights. The area under each skylight whose horizontal dimension in each direction is equal to the skylight dimension in that direction plus either the floor to ceiling height or the dimension to an opaque partition, or one-half the distance to an adjacent skylight or vertical glazing, whichever is least.

At vertical glazing. The area adjacent to vertical glazing which receives daylighting from the glazing. For purposes of this definition and unless more detailed daylighting analysis is provided, the daylighting zone depth is assumed to extend into the space a distance of 15 feet (4572 mm) or to the nearest opaque partition, whichever is less. The daylighting zone width is assumed to be the width of the window plus either 2 feet (610 mm) on each side (the distance to an opaque partition) or one half the distance to an adjacent skylight or vertical glazing, whichever is least.

DAYLIGHT SENSING CONTROL (DS). A device that automatically regulates the power input to electric lighting near the fenestration to maintain the desired workplace illumination, thus taking advantage of direct or indirect sunlight.

DEAD BAND. The range of values within which a sensed variable can vary without initiating a change in the controlled process.

DECORATIVE LIGHTING. See “Lighting, decorative.”

DEGREE DAY. The difference in temperature between the outdoor mean temperature over a 24-hour period and a given base temperature. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) Cooling degree day base 50°F (10°C), CDD 50: for any one day, when the mean temperature is more than 50°F (10°C), there are as many degree days as degrees Fahrenheit temperature difference between the mean temperature for the day and 50°F (10°C). Annual cooling degree days (CDDs) are the sum of the degree-days over a calendar year.
- (b) Heating degree day base 65°F (18°C), HDD 65: for any one day, when the mean temperature is less than 65°F (18°C), there are as many degree days as degrees Fahrenheit temperature difference between the mean temperature for the day and 65°F (18°C). Annual heating degree days (HDDs) are the sum of the degree days over a calendar year.

DEMAND. The highest amount of power (average Btu/h over an interval) recorded for a building or facility in a selected time frame.

DESIGN A. National Electrical Manufacturers Association (NEMA) design class designations for standard general purpose polyphase squirrel-cage induction motors.

DESIGN B. National Electrical Manufacturers Association (NEMA) design class designations for standard general purpose polyphase squirrel-cage induction motors.

DESIGN E. National Electrical Manufacturers Association (NEMA) design class designations for standard general purpose polyphase squirrel-cage induction motors.

DESIGN CAPACITY. Output capacity of a system or piece of equipment at design conditions.

DESIGN CONDITIONS. Specified environmental conditions, such as temperature and light intensity, required to be produced and maintained by a system and under which the system must operate.

DESIGN ENERGY COST. The annual energy cost calculated for a proposed design.

DESIGN PROFESSIONAL. An architect or engineer licensed to practice in accordance with applicable state licensing laws.

DIRECT DIGITAL CONTROL (DDC). A type of control where controlled and monitored analog or binary data (e.g., temperature, contact closures) are converted to digital format for manipulation and calculations by a digital computer or microprocessor, then converted back to analog or binary form to control physical devices.

DISCONNECT. A device or group of devices or other means by which the conductors of a circuit can be disconnected from their source of supply.

DISTRIBUTION SYSTEM. Conveying means, such as ducts, pipes, and wires, to bring substances or energy from a source to the point of use. The distribution system includes such auxiliary equipment as fans, pumps, and transformers.

DOOR. All operable opening areas (which are not fenestration) in the building envelope, including swinging and roll-up doors, fire doors, and access hatches. Doors that are more than one-half glass are considered fenestration. (See “Fenestration”). For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Nonswinging.** Roll-up, sliding, and all other doors that are not swinging doors.
- (b) **Swinging.** All operable opaque panels with hinges on one side and opaque revolving doors.

DOOR AREA. Total area of the door measured using the rough opening and including the door slab and the frame (see “Fenestration area”).

DRAWBAND. A fastener which surrounds and fastens a duct fitting with either the inner lining or the outer jacket of flexible ducts. Tension ties, clinch bands, draw ties, and straps are considered drawbands.

DUCT FITTING. Couplings that join sections of ducting together or to other air distribution system components. When used to join sections of flexible nonmetal duct, duct fittings are typically metal or other rigid material and have a raised bead or indented groove against which the drawband is secured. Terminal fittings join ducting to supply outlets and return inlets at the end of the distribution system and include register and return boots and register and return boxes. Intermediate fittings join flexible nonmetal duct to other sections of flexible nonmetal duct, to sections of other types of ducting, and to mechanical equipment and include collars, take-offs, tap-ins, sleeves, and the supply and return ends of air handlers and furnaces (see “Integral flange duct collar fitting”).

DUCTS IN CONDITIONED SPACE. Ductwork located on the conditioned side of the envelope insulation and constructed in such a manner that any leakage will be discharged into the conditioned space.

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

ECONOMIZER. A duct and damper arrangement and automatic control system that together allow a cooling system to supply outside air to reduce or eliminate the need for mechanical cooling during mild or cold weather.

ECONOMIZER, WATER. A system by which the supply air of a cooling system is cooled indirectly with water that is itself cooled by heat or mass transfer to the environment without the use of mechanical cooling.

EFFECTIVE AIR SPACE EMITTANCE. The radiation heat transfer property E of an air space determined by the emissivity of the surfaces bounding that air space (see the 2001 ASHRAE *Handbook of Fundamentals*, Chapter 38, Table 3).

EFFICIENCY. Performance at specified rating conditions.

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.

ELECTRIC METER. A mechanical/electrical device that can measure electric power.

ELECTRIC SUPPLIER. An agency that sells and/or distributes electric power.

EMERGENCY POWER SYSTEM. A system that is required by codes or other laws to automatically supply illumination or power or both in the event of failure of the normal supply or in the event of accidents to such systems. Such systems may also include standby loads incidental to system operations but shall not include systems for optional standby loads only.

EMISSIVITY. The ratio of the total radiant flux emitted by a body to that emitted by an ideal black body at the same temperature.

EMITTANCE. The ratio of the radiant heat flux emitted by a specimen to that emitted by a blackbody at the same temperature and under the same conditions.

ENCLOSED SPACE. A volume substantially surrounded by solid surfaces such as walls, floors, roofs and openable devices such as doors and operable windows.

ENCLOSED SUPPORT PLATFORM. A framed enclosure located inside or outside the conditioned space, which supports a furnace or central heating/air conditioning air handler and which may contain and protect a return duct section of the air distribution system.

ENCLOSURE. The case or housing of an apparatus, or the fence or walls surrounding an installation, to prevent personnel from accidentally contacting energized parts or protect equipment from physical damage.

ENERGY. The capacity for doing work. It takes a number of forms that may be transformed from one into another such as thermal (heat), mechanical (work), electrical, and chemical. Customary measurement units are British thermal units (Btu).

ENERGY COST BUDGET. The annual energy cost for the budget building.

ENERGY EFFICIENCY RATIO (EER). The ratio of net cooling capacity in Btu/h to total rate of electric input in watts under designated operating conditions [see “Coefficient of performance (COP) —cooling”].

ENERGY FACTOR (EF). A measure of water heater overall efficiency.

ENERGY MANAGEMENT SYSTEM. A control system designed to monitor the environment and the use of energy in a facility and to adjust the parameters of local control loops to conserve energy while maintaining a suitable environment.

ENERGY PERFORMANCE LEVEL. An indicator of the energy-related performance of a building, including, but not limited to, the levels of insulation, the amount and type of glass, and the HVAC and water heating system efficiencies.

ENERGY, RECOVERED. See “Recovered energy.”

ENVELOPE PERFORMANCE FACTOR. The trade-off value for the building envelope performance compliance option calculated using the procedures specified in Appendix 13-B for Compliance Methods B and C. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Base envelope performance factor:** The building envelope performance factor for the base design.
- (b) **Proposed envelope performance factor:** The building envelope performance factor for the proposed design.

EQUIPMENT. Devices for comfort conditioning, electric power, lighting, transportation, or service water heating including, but not limited to, furnaces, boilers, air conditioners, heat pumps, chillers, water heaters, lamps, luminaires, ballasts, elevators, escalators or other devices or installations.

EXISTING BUILDING. A building or portion thereof that was previously occupied or approved for occupancy by the authority having jurisdiction.

EXISTING EQUIPMENT. Equipment previously installed in an existing building.

EXISTING SYSTEM. A system or systems previously installed in an existing building.

EXFILTRATION. Uncontrolled outward air leakage from inside a building including leakage through cracks and interstices around windows and doors and through any other exterior partition or penetration.

EXTERIOR BUILDING ENVELOPE. See “Building envelope.”

EXTERIOR LIGHTING POWER ALLOWANCE. See “Lighting power allowance.”

EXTERIOR WALL. A wall of a structure that is exposed to outdoor climate conditions and which forms a boundary between a conditioned and an outdoor space (see “Adjacent wall”).

FACADE AREA. Area of the facade, including overhanging soffits, cornices, and protruding columns, measured in elevation in a vertical plane parallel to the plane of the face of the building. Nonhorizontal roof surfaces shall be included in the

calculation of vertical facade area by measuring the area in a plane parallel to the surface.

F-FACTOR. The perimeter heat loss factor for slab-on-grade floors, expressed in Btu/h-ft²-°F.

FACTORY-SEALED AIR HANDLING UNIT. A furnace, or an air conditioner or heat pump fan-coil unit which is certified by its manufacturer to withstand, without leakage, an air pressure of 1-inch water gauge, when all air inlets, air outlets and condensate drain port(s), when present, are sealed at an air pressure of 1-inch water gauge with no greater than 2 design CFM discharge.

FAN SYSTEM ENERGY DEMAND (or FAN SYSTEM POWER). The sum of the nominal power demand (nameplate horsepower) of motors of all fans that are required to operate at design conditions to supply air from the heating or cooling source to the conditioned space(s) and return it to the source or exhaust it to the outdoors.

FEEDER CONDUCTORS. The wires that connect the service equipment to the branch circuit breaker panels.

FENESTRATION. All areas (including the frames) in the building envelope that let in light, including windows, plastic panels, clerestories, skylights, glass doors that are more than one-half glass, and glass block walls (see “Building envelope” and “Door”).

- (a) **Skylight:** A fenestration surface having a slope of less than 60 degrees from the horizontal plane. Other fenestration, even if mounted on the roof of a building, is considered vertical fenestration.
- (b) **Vertical fenestration:** All fenestration other than skylights. Trombe wall assemblies, where glazing is installed within 12 inches (305 mm) of a mass wall, are considered walls, not fenestration.

FENESTRATION AREA. Total area of the fenestration measured using the rough opening and including the glazing, sash, and frame. For doors where the glazed vision area is less than 50 percent of the door area, the fenestration area is the glazed vision area. For all other doors, the fenestration area is the door area (see “Door area”).

FENESTRATION, VERTICAL. See “Fenestration,” “Skylight.”

FIRE WALL. Fire-resistant wall, having protective openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

FIXTURE. The component of a luminaire that houses the lamp or lamps, positions the lamp, shields it from view, and distributes the light. The fixture also provides for connection to the power supply, which may require the use of a ballast.

FLEXIBLE NONMETAL DUCT. A type of flexible air duct comprised of a wire-reinforced core (usually plastic), an insulation layer and an outer jacket (usually a durable reinforced plastic).

FLOODLIGHTING. A lighting system designated to light an area using projector-type luminaires usually capable of being pointed in any direction.

FLOOR, ENVELOPE. That lower portion of the building envelope, including opaque area and fenestration, that has conditioned or semiheated space above and is horizontal or tilted at an angle of less than 60 degrees from horizontal but excluding slab-on-grade floors. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Mass floor:** A floor with a heat capacity that exceeds (1) 7 Btu/ft²-°F or (2) 5 Btu/ft²-°F provided that the floor has a material unit mass not greater than 120 pound per cubic foot (1b/ft³)(1922 kg/m³)
- (b) **Steel joist floor:** A floor that (1) is not a mass floor and (2) that has steel joist members supported by structural members.
- (c) **Wood framed and other floors:** All other floor types, including wood joist floors (see “Building envelope,” “Fenestration,” “Opaque area,” and “Slab-on-grade floor”).

FLOOR AREA, GROSS. The sum of the floor areas of the spaces within the building including basements, mezzanine and intermediate-floored tiers, and penthouses with headroom height of 7.5 feet (2286 mm) or greater. It is measured from the exterior faces of exterior walls or from the centerline of walls separating buildings, but excluding covered walkways, open roofed-over areas, porches and similar spaces, pipe trenches, exterior terraces or steps, chimneys, roof overhangs, and similar features.

- (a) **Gross building envelope floor area:** The gross floor area of the building envelope, but excluding slab-on-grade floors.
- (b) **Gross conditioned floor area:** The gross floor area of conditioned spaces.
- (c) **Gross lighted floor area:** The gross floor area of lighted spaces.
- (d) **Gross semiheated floor area:** The gross floor area of semiheated spaces (see “Building envelope,” “Floor,” “Slab-on-grade floor” and “Space”).

FLUE DAMPER. A device in the flue outlet or in the inlet of or upstream of the draft control device of an individual, automatically operated, fossil fuel-fired appliance that is designed to automatically open the flue outlet during appliance operation and to automatically close the flue outlet when the appliance is in a standby condition.

FOOTCANDLE (FC). A unit of illuminance of one lumen uniformly distributed over one square foot of surface.

FOSSIL FUEL. Fuel derived from a hydrocarbon deposit such as petroleum, coal or natural gas derived from living matter of a previous geologic time.

FUEL. A material that may be used to produce heat or generate power by combustion.

GASKETING. A compressible, resilient elastic packing, made of foam rubber or of a synthetic foam polymer. A gasket is distinct from the components being joined and must be capable of closing all air leakage pathways between the air barriers of the joint and of creating an air-tight seal.

GENERAL LIGHTING. See “Lighting, general.”

GENERALLY ACCEPTED ENGINEERING STANDARD. A specification, rule, guide, or procedure in the field of engineering, or related thereto, recognized and accepted as authoritative.

GLAZED WALL SYSTEM. A category of site-assembled fenestration products, which includes, but is not limited to, curtainwalls and solariums.

GRADE. The finished ground level adjoining a building at all exterior walls.

GROSS FLOOR AREA. The sum of the floor areas of the conditioned spaces including basements, mezzanine and intermediate-floored tiers and penthouses of headroom height 7.5 feet (2286 mm) or greater. It is measured from the exterior faces of exterior walls or from the centerline of walls separating buildings.

GROSS LIGHTED AREA (GLA). See “Floor area, gross;” “Gross lighted floor area.”

GROSS ROOF AREA. See “Roof area, gross.”

GROSS WALL AREA. See “Wall area, gross.”

GUTTER. The space available for wiring inside panel boards and other electric panels. A separate wireway used to supplement wiring spaces in electric panels.

HARMONICS. Voltages and currents at frequencies other than 60 Hz (or 50 Hz where applicable) that cause heating and other detrimental effects in the power system.

HARMONIC LOSSES. The wasting of electric energy (to heat) that occurs when harmonic currents are present in the power system.

HEAT. The form of energy that is transferred by virtue of a temperature difference or a change in the state of a material.

HEAT CAPACITY (HC): The amount of heat necessary to raise the temperature of a given mass 1°F (-17°C). Numerically, the sum of the products of the mass per unit area of each individual material in the roof, wall, or floor surface multiplied by its individual specific heat (Btu/ft²·°F).

HEAT TRACE. A heating system where the externally applied heat source follows (traces) the object to be heated, e.g., water piping.

HEAT PUMP. A mechanical refrigeration-cycle system which has been designed to accomplish space heating, water heating or both and, when the evaporator and condenser effects are reverse, may be used for space air conditioning or water chilling.

HEAT TRAP. A device or arrangement of the hot water piping leaving the water heater, constructed to counteract the convective forces of the heated water (thermosyphoning) during stand-by periods.

HEATED BUILDING. Any building with heating equipment installed at the time of construction, or designed for the future installation of heating equipment, using electricity or fossil fuels.

HEATED SLAB. A floor, usually constructed of concrete, that has heat energy supplied into the slab to provide heating to an interior space.

HEATED SPACE. See “Space.”

HEATING DESIGN TEMPERATURE. The outdoor dry-bulb temperature equal to the temperature that is exceeded at least 99.6 percent of the number of hours during a typical weather year.

HEATING DEGREE DAY. See “Degree day.”

HEATING SEASONAL PERFORMANCE FACTOR (HSPF). The total heating output of a heat pump during its normal annual usage period for heating (in Btu) divided by the total electric energy input during the same period.

HISTORIC. A building or space that has been specifically designated as historically significant by the adopting authority or is listed in the National Register of Historic Places or has been determined to be eligible for listing by the U.S. Secretary of the Interior.

HOME INSULATION. Any material, mainly insulation, used to retard the flow of heat through the building envelope that is tested and labeled with an installed *R*-value as required by the Federal Trade Commission rules, 16 U.S. Code of Federal Regulations (CFR) Part 460.

HORSEPOWER (HP). Unit of power; work done at a rate equal to 745.7 Watts, 550 foot pound per second or 33,000 foot pound per minute.

HOT WATER SUPPLY BOILER. A boiler used to heat water for purposes other than space heating.

HUMIDISTAT. An automatic control device used to maintain humidity at a fixed or adjustable set point.

HVAC. Heating, ventilating and air conditioning.

HVAC SYSTEM. The equipment, distribution systems, and terminals that provide, either collectively or individually, the processes of heating, ventilating, or air conditioning to a building or portion of a building.

ILLUMINANCE. The density of the luminous flux incident on a surface. It is the quotient of the luminous flux divided by the area of the surface when the latter is uniformly illuminated.

INDIRECTLY CONDITIONED SPACE. See “Space.”

INDOOR. Within the conditioned building envelope.

INFILTRATION. The uncontrolled inward air leakage through cracks and crevices in any building element and around windows and doors of a building caused by pressure differences across these elements due to factors such as wind, inside and outside temperature differences (stack effect), and imbalance between supply and exhaust air systems.

INFILTRATION BARRIER. A product or system designed to limit the free passage of air through a building envelope component (wall, ceiling or floor). Such products and systems are sealed together to form a continuous barrier against air infiltration.

INSTALLED INTERIOR LIGHTING POWER. The power in watts of all permanently installed general, task, and furniture lighting systems and luminaires.

INSULATION. Material mainly used to retard the flow of heat (see “Home insulation”).

INSULATION BAFFLE. A device installed at the eave of an attic to prevent insulation from blocking the air flow channel between the soffits and attic.

INSULATION CHUTE. See “Insulation baffle.”

INSULATION DAMS. A flexible device used between rafters at the eave line of roof systems that holds loose fill insulation away from soffit ventilation areas and prevents blockage of natural ventilation flow.

INTEGRAL-FLANGE DUCT COLLAR FITTING. A type of duct collar fitting having a flange that is secured to and sealed to the cylinder or sleeve of the fitting. A function of this flange is to provide a surface which can be sealed to rigid ductboard.

INTEGRATED PART-LOAD VALUE (IPLV). A single-number figure of merit based on part-load EER, COP, or kW/ton expressing part-load efficiency for air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities for the equipment.

INTERIOR LIGHTING POWER ALLOWANCE (ILPA). See “Lighting power allowance.”

ISOLATION DEVICES. Devices that isolate HVAC zones so that they can be operated independently of one another. Isolation devices include, but are not limited to, separate systems, isolation dampers, and controls providing shutoff at terminal boxes.

JOIST, STEEL. Any structural steel member of a building or structure made of hot-rolled or cold-rolled solid or open-web sections.

KILOVOLT-AMPERE (kVA). Where the term “kilovoltampere” (kVA) is used in this standard, it is the product of the line current (amperes) times the nominal system voltage (kilovolts) times 1.732 for three-phase currents. For single-phase applications, kVA is the product of the line current (amperes) times the nominal system voltage (kilovolts).

KILOWATT (kW). The basic unit of electric power, equal to 1000 W.

KNEE WALLS. Vertical walls which separate conditioned space from the attic.

LABELED. Equipment or materials to which has been attached a label, symbol, or other identifying mark acceptable to the authority having jurisdiction and concerned with product evaluation and by whose labeling the manufacturer indicates compliance with appropriate standards.

LAMP. A generic term for a man-made light source often called a bulb or tube.

- (a) **Compact fluorescent lamp:** A fluorescent lamp of a small compact shape, with a single base that provides the entire mechanical support function.
- (b) **Fluorescent lamp:** A low-pressure electric discharge lamp in which a phosphor coating transforms some of the ultraviolet energy generated by the discharge into light.
- (c) **General service lamp:** A class of incandescent lamps that provide light in virtually all directions. General service lamps are typically characterized by bulb

shapes such as A, standard; S, straight side; F, flame; G, globe; and PS, pear straight.

- (d) **High-intensity discharge (HID) lamp:** An electric discharge lamp in that light is produced when an electric arc is discharged through a vaporized metal such as mercury or sodium. Some HID lamps may also have a phosphor coating that contributes to the light produced or enhances the light color.
- (e) **Incandescent lamp:** A lamp in which light is produced by a filament heated to incandescence by an electric current.
- (f) **Reflector lamp:** A class of incandescent lamps that have an internal reflector to direct the light. Reflector lamps are typically characterized by reflective characteristics such as R, reflector; ER, ellipsoidal reflector; PAR, parabolic aluminized reflector; MR, mirrorized reflector; and others.

LAMP WATTAGE, RATED. The power consumption of a lamp as published in manufacturers’ literature.

LIGHTING, DECORATIVE. Lighting that is purely ornamental and installed for aesthetic effect. Decorative lighting shall not include general lighting.

LIGHTING, GENERAL. Lighting that provides a substantially uniform level of illumination throughout an area. General lighting shall not include decorative lighting or lighting that provides a dissimilar level of illumination to serve a specialized application or feature within such area.

LIGHTING SYSTEM. A group of luminaires circuited or controlled to perform a specific function.

LIGHTING POWER ALLOWANCE.

- (a) Interior lighting power allowance: The maximum lighting power in watts allowed for the interior of a building.
- (b) Exterior lighting power allowance: The maximum lighting power in watts allowed for the exterior of a building.

LIGHTING POWER DENSITY (LPD). The maximum lighting power per unit area of a building classification of space function.

LIMITED OR SPECIAL USE BUILDING. A building that is determined by the Florida Building Commission to have limited energy use potential based on its size, configuration or anticipated time occupied, or that has a special use requirement.

LISTED. Equipment, materials or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material or service meets identified standards or has been tested and found suitable for a specified purpose.

LOW-RISE RESIDENTIAL. Single-family houses, multiple-family structures of three stories or fewer above grade, manufactured houses (mobile homes), and manufactured houses (modular).

LUMEN (LM). SI unit of luminous flux. Radiometrically, it is determined from the radiant power. Photometrically, it is the luminous flux emitted within a unit solid angle (one Steradian) by a point source having a uniform luminous intensity of one candela.

LUMEN MAINTENANCE CONTROL. A device that senses the illumination level and causes an increase or decrease of illuminance to maintain a preset illumination level.

LUMINAIRE. A complete lighting unit consisting of a lamp or lamps together with the housing designed to distribute the light, position and protect the lamps, and connect the lamps to the power supply.

MANUAL (NONAUTOMATIC). Requiring personal intervention for control. Nonautomatic does not necessarily imply a manual controller, only that personal intervention is necessary (see “Automatic”).

MANUFACTURED BUILDING. A closed structure, building assembly, or system of subassemblies, which may include structural, electrical, plumbing, heating, ventilating, or other service systems manufactured for installation or erection, with or without other specified components, as a finished building or as part of a finished building, which shall include, but not be limited to, residential, commercial, institutional, storage, and industrial structures.

MANUFACTURED HOME. As defined by the U.S. Department of Housing and Urban Development, residential units constructed in accordance with Federal Mobile Construction and Safety Standards, pursuant to 42 USC 55.5401, et. seq. and 24 CFR 3282 and 3283.

MANUFACTURER. The company engaged in the original production and assembly of products or equipment or a company that purchases such products and equipment manufactured in accordance with company specifications.

MARKED (NAMEPLATE) RATING. The design load operating conditions of a device as shown by the manufacturer on the nameplate or otherwise marked on the device.

MASS FLOOR. See “Floor.”

MASS WALL. See “Wall.”

MASTIC. A thick, pliable substance that adheres well to specific materials and is used for sealing different building components together. Mastics are often used in conjunction with fibrous or mesh fabric.

MASTIC RIBBONS. Malleable, putty-like packings which are used in applications akin to those of gasketing; but, they do not have elasticity of gasketing. Such mastics contain nearly 100 percent solids, require no curing in air, and are used without reinforcing fabric.

MEAN TEMPERATURE. One-half the sum of the minimum daily temperature and maximum daily temperature.

MECHANICAL CLOSET. For the purposes of this code, a closet used as an air plenum which contains the blower unit or air handler of a central air conditioning or heating unit.

MECHANICAL EQUIPMENT PLENUM CHAMBER. In an air-distribution system, that part of the casing, or an air chamber furnace, to or from which the air duct system delivers conditioned air.

MECHANICAL HEATING. Raising the temperature of a gas or liquid by use of fossil fuel burners, electric resistance heaters, heat pumps, or other systems that require energy to operate.

MECHANICAL COOLING. Reducing the temperature of a gas or liquid by using vapor compression, absorption, desiccant dehumidification combined with evaporative cooling, or another energy-driven thermodynamic cycle. Indirect or direct evaporative cooling alone is not considered mechanical cooling.

MECHANICAL VENTILATION. The process of supplying or removing air by mechanical means to or from any space.

METAL BUILDING. A complete integrated set of mutually dependent components and assemblies that form a building, which consists of a steel-framed superstructure and metal skin.

METAL BUILDING ROOF. See “Roof.”

METAL BUILDING WALL. See “Wall.”

METERING. Instruments that measure electric voltage, current, power, etc.

MOTOR, ENERGY EFFICIENT. Motor having a nominal efficiency not less than that required by NEMA Standard MG12.55, dated 3/14/91.

MOTOR POWER, RATED. The rated output power from the motor.

MULTIPLE-FAMILY RESIDENCE. Any residential dwelling unit that is attached to another such unit by a common wall, ceiling or floor such as a duplex, townhouse, condominium or similar unit, regardless of ownership.

MULTIZONE SYSTEM(S). One or more HVAC system(s) designed to supply conditioned air to more than one independently serviced area of a building. Each zone must have separate thermostats and be separated by walls or closable doors not exceeding 40 square feet (4 m²) between zones.

NAMEPLATE RATING. See “Marked (nameplate) rating.”

NEW ENERGY. Energy, other than recovered energy, used for the purpose of heating or cooling (See “Energy”).

NONAUTOMATIC. See “Manual.”

NONDEPLETABLE ENERGY SOURCES. Sources of energy derived from incoming solar radiation, including photosynthetic processes, wind, waves, and tides, lake or pond thermal differences and energy derived from the internal heat of the earth, including nocturnal thermal exchanges.

NONRECIRCULATING SYSTEM. A domestic or service hot water distribution system that is not a recirculating system.

NONRENEWABLE ENERGY. Energy derived from a fossil fuel source.

NONRESIDENTIAL. All occupancies other than residential (see “Residential”).

NONSTANDARD PART LOAD VALUE (NPLV). A single number part-load efficiency figure of merit calculated and referenced to conditions other than IPLV conditions, for units that are not designed to operate at ARI Standard Rating Conditions.

NONSWINGING DOOR. See “Door.”

NORTH ORIENTED. Facing within 45 degrees of true north (northern hemisphere).

OCCUPANCY. The purpose for which a building, or part thereof, is used or intended to be used. For the purposes of determining changes of occupancy for this code, the occupancy shall be considered the major occupancy group designations established by the locally adopted building code.

OCCUPANT SENSOR. A device that detects the presence or absence of people within an area and causes lighting, equipment, or appliances to be regulated accordingly.

OPAQUE. All areas in the building envelope, except fenestration and building service openings such as vents and grilles (see “Building envelope” and “Fenestration”).

OPERABLE APERTURE AREAS. Areas of windows, sliding glass doors and screened entry doors that provide access to incoming breezes in their fully extended open position.

OPTIMUM START CONTROLS. Controls that are designed to automatically adjust the start time of an HVAC system each day with the intention of bringing the space to desired occupied temperature levels immediately before scheduled occupancy.

ORIENTATION. The direction an envelope element faces, i.e., the direction of a vector perpendicular to and pointing away from the surface outside of the element. For vertical fenestration, the two categories are north oriented and all other (see “North oriented”).

OUTDOOR. The environment exterior to the building structure.

OUTDOOR (OUTSIDE) AIR. Air that is outside the building envelope or is taken from outside the building that has not been previously circulated through the building.

OUTSIDE. The environment exterior to the conditioned space of the building and may include attics, garages, crawlspaces, etc., but not return air plenums.

OVERCURRENT. Any current in excess of the rated current of equipment or the ampacity of a conductor. It may result from overload, short circuit or ground fault.

OVERHANG HEIGHT. The vertical measure of the distance from the bottom of a window to the bottom of the overhang.

OVERHANG LENGTH. The horizontal measure of how far a window overhang projects out from the glass surface.

PACKAGED TERMINAL AIR CONDITIONER (PTAC).

A factory selected wall sleeve and separate unencased combination of heating and cooling components, assemblies or sections. It may include heating capability by hot water, steam, or electricity and is intended for mounting through the wall to serve a single room or zone.

PACKAGED TERMINAL HEAT PUMP (PTHP). A PTAC capable of using the refrigerating system in a reverse cycle or heat pump mode to provide heat.

PARTY WALL. A fire wall on an interior lot line used or adapted for joint service between two buildings.

PERMANENTLY INSTALLED. Equipment that is fixed in place and is not portable or movable.

PLENUM. A compartment or chamber to which one or more ducts are connected, that forms a part of the air distribution system, and that is not used for occupancy or storage. A plenum often is formed in part or in total by portions of the building.

POOL. Any structure, basin, or tank containing an artificial body of water for swimming, diving, or recreational bathing. The term includes, but is not limited to, swimming pool, whirlpool, spa, or hot tub.

POOL COVER. Sheet of material, typically plastic, designed to cover the water which may prevent water or heat loss through convection, radiation and evaporation.

POSITIVE HEAT SUPPLY. Heat supplied to a space by design or by heat losses occurring from energy-consuming systems or components associated with that space.

POSITIVE INDOOR PRESSURE. A positive pressure condition within a conditioned space caused by bringing in more outside air than the amount of air that is exhausted and/or lost through air leakage.

POST OR PIER CONSTRUCTION. Raised wood floor supported above grade on posts or piers with unenclosed space beneath.

POWER. In connection with machines, power is the time rate of doing work. In connection with the transmission of energy of all types, power refers to the rate at which energy is transmitted. It is measured in watts (W) or British thermal units per hour (Btu/h) (see “Horsepower”).

POWER FACTOR. The ratio of total real power in watts to the apparent power (root-mean-square volt amperes).

PRESSURE ENVELOPE. The primary air barrier of a building; that part of the envelope that provides the greatest resistance to air flow to or from the building.

PRESSURE-SENSITIVE TAPE. Tape used for sealing duct system components and air barriers which adheres when pressure is applied and is not heat activated.

PRIMARY AIR SYSTEM. The central air-moving heating and cooling equipment that serves multiple zones through mixing boxes, VAV boxes, or reheat coils.

PRIMARY LIVING AREA. A family room or great room, or a living room if no family room or great room is present. Formal living rooms, where a family room or great room is present, dining rooms and kitchens are not considered primary living areas.

PROCESS ENERGY. Energy consumed in support of a manufacturing, industrial, or commercial process other than conditioning spaces and maintaining comfort and amenities for the occupants of a building.

PROCESS LOAD. The load on a building resulting from the consumption or release of process energy.

PROJECTION FACTOR (PF). The ratio of the horizontal depth of the external shading projection divided by the sum of the height of the fenestration and the distance from the top of the fenestration to the bottom of the farthest point of the external shading projection, in consistent units.

PROPOSED DESIGN. A computer representation of the actual proposed building design or portion thereof used as the basis for calculating the design energy cost.

PUBLIC BUILDING. Any building open to the public during normal business hours, including:

- Any building providing facilities or shelter for public assembly, or used for educational, office or institutional purposes;
- Any inn, motel, hotel, sport arena, supermarket, transportation terminal, retail store, restaurant, or other commercial establishment providing services or retail merchandise;
- Any portion of an industrial plant building used primarily as office space; and
- Any building owned by the state or political subdivision including libraries, museums, schools, hospitals, auditoriums, sport arenas, and university buildings.

PUBLIC FACILITY RESTROOM. A restroom used by the transient public.

PUMP SYSTEM ENERGY DEMAND (PUMP SYSTEM POWER). The sum of the nominal power demand (nameplate horsepower) of motors of all pumps that are required to operate at design conditions to supply fluid from the heating or cooling source to all heat transfer devices (e.g., coils, heat exchanger) and return it to the source.

RADIANT BARRIER SYSTEM (RBS). A building construction consisting of a low emittance (normally 0.1 or less) surface (usually aluminum foil) bounded by an open air space. A RBS is used for the sole purpose of limiting heat transfer by radiation and is not specifically intended to reduce heat transfer by convection or conduction.

RADIANT HEATING SYSTEM. A heating system that transfers heat to objects and surfaces within the heated space primarily (greater than 50 percent) by infrared radiation.

RATED LAMP WATTAGE. See “Lamp wattage, rated.”

RATED MOTOR POWER. See “Motor power rated.”

RATED R-VALUE OF INSULATION. The thermal resistance of the insulation alone as specified by the manufacturer in units of $\text{h}\cdot\text{ft}^2\cdot\text{F}/\text{Btu}$ at a mean temperature of 75°F (24°C). Rated R -value refers to the thermal resistance of the added insulation in framing cavities or insulated sheathing only and does not include the thermal resistance of other building materials or air films (see “Thermal resistance”).

READILY ACCESSIBLE. Capable of being reached quickly for operation, renewal, or inspections without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders, chairs, etc. In public facilities, accessibility may be limited to certified personnel through locking covers or by placing equipment in locked rooms.

RECIRCULATING SYSTEM. A domestic or service hot water distribution system that includes a closed circulation circuit designed to maintain usage temperatures in hot water pipes near terminal devices (e.g., lavatory faucets, shower heads) in order to reduce the time required to obtain hot water when the terminal device valve is opened. The motive force for circulation is either natural (due to water density variations with temperature) or mechanical (recirculation pump).

RECOOLING. Lowering the temperature of air that has been previously heated by a mechanical heating system.

RECORD DRAWINGS. Drawings that record the conditions of the project as constructed. These include any refinements of the construction or bid documents.

RECOVERED ENERGY. Energy utilized which would otherwise be wasted from an energy utilization system.

REFLECTANCE. The ratio of the light reflected by a surface to the light incident upon it.

REHEAT. The application of sensible heat to supply air that has been previously cooled below the temperature of the conditioned space by either mechanical refrigeration or the introduction of outdoor air to provide space cooling.

REHEATING. Raising the temperature of air that has been previously cooled either by mechanical refrigeration or an economizer system.

RENOVATION. Any structural repair, reconstruction or restoration to a structure, the costs of which equals or exceeds, over a one-year period, a cumulative total of 30 percent of the assessed value of the structure when that value is assessed, either:

1. Before the improvement or repair is started; or
2. Before the damage occurred, if the structure has been damaged.

For the purposes of this code, renovation occurs when the first alteration of any wall, ceiling, floor, or other structural part or mechanical system of the building commences, whether or not that alteration affects the external dimensions of the structure.

REPAIR. The reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

REPLACEMENT. The installation of part or all of an existing mechanical or electrical system in an existing building.

RESET. Automatic adjustment of the controller set point to a higher or lower value.

RESISTANCE, ELECTRIC. The property of an electric circuit or of any object used as part of an electric circuit that determines for a given circuit the rate at which electric energy is converted into heat or radiant energy and that has a value such that the product of the resistance and the square of the current gives the rate of conversion of energy.

RESIDENTIAL. (Subchapter 13-4 applications only.) Spaces in buildings used primarily for living and sleeping. Residential spaces include, but are not limited to, dwelling units, hotel/motel guest rooms, dormitories, nursing homes, patient rooms in

hospitals, lodging houses, fraternity/sorority houses, hostels, prisons and fire stations.

RETROFIT. Modification of existing equipment or systems to incorporate improved performance of operation.

ROOF. The upper portion of the building envelope, including opaque areas and fenestration, that is horizontal or tilted at an angle of less than 60 degrees from horizontal. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Attic and other roofs:** All other roofs, including roofs with insulation entirely below (inside of) the roof structure (i.e., attics, cathedral ceilings, and single-rafter ceilings), roofs with insulation both above and below the roof structure, and roofs without insulation but excluding metal building roofs.
- (b) **Metal building roof:** a roof that is constructed with (a) a metal, structural, weathering surface, (b) has no ventilated cavity, and (c) has the insulation entirely below deck (i.e., does not include composite concrete and metal deck construction nor a roof framing system that is separated from the superstructure by a wood substrate) and whose structure consists of one or more of the following configurations: (1) metal roofing in direct contact with the steel framing members; (2) insulation between the metal roofing and the steel framing members; or (3) insulated metal roofing panels installed as described in (1) or (2).
- (c) **Roof with insulation entirely above deck:** A roof with all insulation (1) installed above (outside of) the roof structure and (2) continuous (i.e., uninterrupted by framing members).
- (d) **Single-rafter roof:** A subcategory of attic roofs where the roof above and the ceiling below are both attached to the same wood rafter and where insulation is located in the space between these wood rafters.

ROOF AREA, GROSS. The area of the roof measured from the exterior faces of walls or from the centerline of party walls (see “Roof;” “Wall”).

ROOF ASSEMBLY. All components of the roof/ceiling envelope through which heat flows, thereby creating building heat loss or gain, where such assembly is exposed to outdoor air and encloses a conditioned space. The gross area of a roof assembly consists of the total interior surface of such assembly, including skylights exposed to the conditioned space.

ROOM AIR CONDITIONER. An encased assembly designed as a unit to be mounted in a window or through a wall, or as a console. It is designed primarily to provide direct delivery of conditioned air to an enclosed space, room, or zone. It includes a prime source of refrigeration for cooling and dehumidification and a means for circulating and cleaning air. It may also include a means for ventilating and heating.

ROOM CAVITY RATIO (RCR). A factor that characterizes room configuration as a ratio between the walls and ceiling and is based upon room dimensions.

SASH CRACK. The sum of all perimeters of all vents, windows, or doors based on overall dimensions of such parts expressed in feet.

SEAL or SEALING–AIR DUCT. The use of closure products either welds, mastic, mastic plus embedded fabric, adhesives, caulking, gaskets, pressure sensitive tapes, heat-activated tapes or combinations thereof as allowed by specific sections of this code, to close cracks, joints, seams, and other openings in the air barriers of air duct, air handling units, and plenum chambers for the purpose of preventing air leakage. No joint or opening from which a closure product is absent shall be considered sealed unless considered otherwise in specific cases identified by this code. Closeness of fit between mated parts alone shall not be considered a seal.

SEASONAL COEFFICIENT OF PERFORMANCE – COOLING (SCOPC). The total cooling output of an air conditioner during its normal annual usage period for cooling divided by the total electric energy input during the same period in consistent units (analogous to the SEER but for IP or other consistent units).

SEASONAL COEFFICIENT OF PERFORMANCE – HEATING (SCOPH). The total heating output of a heat pump during its normal annual usage period for heating divided by the total electric energy input during the same period in consistent units (analogous to the HSPF but for IP or other consistent units).

SEASONAL ENERGY EFFICIENCY RATIO (SEER). The total cooling output of an air conditioner during its normal annual usage period for cooling (in Btu) divided by the total electric energy input during the same period (in Wh).

SEMIEXTERIOR BUILDING ENVELOPE. See “Building envelope.”

SEMIHEATED FLOOR AREA. See “Floor area.”

SEMIHEATED SPACE. See “Space.”

SEQUENCE. A consecutive series of common events.

SERVICE. The equipment for delivering energy from the supply or distribution system to the premises served.

SERVICE AGENCY. Agency capable of providing calibration, testing, or manufacture of equipment, instrumentation, metering, or control apparatus, such as a contractor, laboratory, or manufacturer.

SERVICE EQUIPMENT. The necessary equipment, usually consisting of a circuit breaker or switch and fuses and accessories, located near the point of entrance of supply conductors to a building or other structure (or an otherwise defined area) and intended to constitute the main control and means of cutoff of the supply. Service equipment may consist of circuit breakers or fused switches provided to disconnect all undergrounded conductors in a building or other structure from the service-entrance conductors.

SERVICE WATER HEATING. Heating water for domestic or commercial purposes other than space heating and process requirements.

SETBACK. Reduction of heating (by reducing the set point) or cooling (by increasing the set point) during hours when a building is unoccupied or during periods when lesser demand is acceptable.

SET POINT. Point at which the desired temperature (°F) of the heated or cooled space is set.

SHADING COEFFICIENT (SC). The ratio of solar heat gain at normal incidence through glazing to that occurring through $\frac{1}{8}$ -inch (3.2 mm) thick clear, double-strength glass. Shading coefficient, as used herein, does not include interior, exterior, or integral shading devices.

SHELL BUILDING. A commercial building that is permitted prior to design completion or which will be finished in sections at a time after construction of the shell.

SIMULATION PROGRAM. A computer program that is capable of simulating the energy performance of building systems.

SINGLE-LINE DIAGRAM. A simplified schematic drawing that shows the connection between two or more items. Common multiple connections are shown as one line.

SINGLE-RAFTER ROOF. See “Roof.”

SINGLE-ZONE SYSTEM. An HVAC system serving a single HVAC zone.

SINGLE ASSEMBLY. A roof and ceiling structure that is constructed as one unit with no attic space in between.

SINGLE-FAMILY RESIDENCE. Detached residential building suited for tenancy by one family unit.

SITE-INSTALLED COMPONENTS AND FEATURES. Equipment, materials, measures, practices and features which are affixed to a new manufactured home at its first set-up that are not initially installed by the manufacturer.

SITE-RECOVERED ENERGY. Waste energy recovered at the building site that is used to offset consumption of purchased fuel or electrical energy supplies.

SITE-SOLAR ENERGY. Thermal, chemical, or electrical energy derived from direct conversion of incident solar radiation at the building site and used to offset consumption of purchased fuel or electrical energy supplies. For the purposes of applying this standard, site-solar energy shall not include passive heat gain through fenestration systems.

SKYLIGHT. See “Fenestration.”

SKYLIGHT WELL. The shaft from the skylight to the ceiling.

SLAB-ON-GRADE FLOOR. That portion of a slab floor of the building envelope that is in contact with the ground and that is either above grade or is less than or equal to 24 inches (610 mm) below the final elevation of the nearest exterior grade.

- (a) **Heated slab-on-grade floor:** A slab-on-grade floor with a heating source either within or below it.
- (b) **Unheated slab-on-grade floor:** A slab-on-grade floor that is not a heated slab-on-grade floor.

SOLAR ENERGY SOURCE. Source of thermal, chemical, or electrical energy derived from direct conversion of incident solar radiation at the building site.

SOLAR FRACTION (SF). Reserved.

SOLAR HEAT GAIN COEFFICIENT (SHGC). The ratio of the solar heat gain entering the space through the fenestration area to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation, which is then reradiated, conducted, or convected into the space (see “Fenestration area”).

SPACE. An enclosed space within a building. The classifications of spaces are as follows for the purpose of determining building envelope requirements.

- (a) **Conditioned space:** A cooled space, heated space, or indirectly conditioned space defined as follows.
 - (1) Cooled space: an enclosed space within a building that is cooled by a cooling system whose sensible output capacity exceeds $5 \text{ Btu/h}\cdot\text{ft}^2$ of floor area.
 - (2) Heated space: an enclosed space within a building that is heated by a heating system whose output capacity relative to the floor area is greater than or equal to $5 \text{ Btu/h}\cdot\text{ft}^2$.
 - (3) Indirectly conditioned space: an enclosed space within a building that is not a heated space or a cooled space, which is heated or cooled indirectly by being connected to adjacent space(s) provided (a) the product of the U -factor(s) and surface area(s) of the space adjacent to connected space(s) exceeds the combined sum of the product of the U -factor(s) and surface area(s) of the space adjoining the outdoors, unconditioned spaces, and to or from semiheated spaces (e.g., corridors) or (b) that air from heated or cooled spaces is intentionally transferred (naturally or mechanically) into the space at a rate exceeding three air changes per hour (ACH) (e.g., atria).
- (b) **Semiheated space:** An enclosed space within a building that is heated by a heating system whose output capacity is greater than or equal to $3.4 \text{ Btu/h}\cdot\text{ft}^2$ of floor area but is not a conditioned space.
- (c) **Unconditioned space:** An enclosed space within a building that is not a conditioned space or a semiheated space. Crawl spaces, attics, and parking garages with natural or mechanical ventilation are not considered enclosed spaces.

SPACE-CONDITIONING CATEGORY. (Subchapter 4 applications only). (1) Nonresidential conditioned space, (2) residential conditioned space and (3) nonresidential and residential semiheated space (see “Nonresidential,” “Residential” and “Space”).

SPACE CONSTRAINED PRODUCT. A central air conditioner or heat pump:

1. that has rated cooling capabilities no greater than 30,000 BTU/h;
2. that has an outdoor or indoor unit having at least two overall exterior dimensions or an overall displacement that
 - (a) is substantially smaller than those of other units that are either currently usually installed in site-built single-family homes, and of a similar cooling and, if heat pump, heating capacity; and
 - (b) if increased, would certainly result in a considerable increase in the usual cost of installation or would certainly result in a significant loss in the utility of the product to the consumer; and

3. is of a product type that was available for purchase in the United States as of December 1, 2000.

SPACE PERMITTING – INSULATION. Where an enclosed space exists in which insulation can be placed without the creation of space for that purpose only; e.g. dropped ceiling below a floor deck or space between joists.

SPACE TYPE. Descriptor of the visual activity to take place in a space; space types are those used for the FLA/COM calculation.

SPLIT SYSTEM. Air-conditioning system or heat pump with compressor and air handler in separate cabinets with the compressor typically located exterior to conditioned space.

STACK LOSSES. Unused heat energy escaping through a flue or chimney to the outdoors in a combustion heating system.

STEADY-STATE CONDITIONS (for gas- or oil-fired heating equipment). Equilibrium conditions as indicated by temperature variations of not more than 3°F (1.7°C) in the stack gas temperature for units equipped with integral draft diverters, or not more than 5°F (2.8°C) in flue gas temperature for units equipped with draft hoods, barometric draft regulators, or direct vent systems, in three successive temperature readings taken 15 minutes apart.

STEEL-FRAMED WALL. See “Wall.”

STEEL-JOIST FLOOR. See “Floor.”

STEM WALL CONSTRUCTION. A type of raised floor system consisting of a wood floor supported above grade by a continuous stem wall around its perimeter.

STORY. Portion of a building that is between one finished floor level and the next higher finished floor level or the roof, provided, however, that a basement or cellar shall not be considered a story

STRUCTURE. That which is built or constructed.

SUBSTANTIAL CONTACT. A condition where adjacent building materials are placed so that proximal surfaces are contiguous, being installed and supported so they eliminate voids between materials without compressing or degrading the thermal performance of either product.

SUN SPACE. A totally enclosed, unconditioned space which is built substantially of glass, attached to the conditioned space of the building, and designed primarily for winter space heating.

SUPPLEMENTARY HEAT. Heat provided, generally electric resistance heat, to make up the difference between heat provided by the refrigeration cycle of a heat pump and that required to meet the heating load at low temperatures. Supplementary heat shall not be construed as the heat required to provide 100-percent backup in case of system failure.

SWINGING DOOR. See “Door.”

SYSTEM. A combination of equipment and auxiliary devices (e.g., controls, accessories, interconnecting means, and terminal elements) by which energy is transformed so it performs a specific function, such as HVAC, service water heating or lighting.

SYSTEM, EXISTING. A system or systems previously installed in an existing building.

TANDEM WIRING. Pairs of luminaires operating with lamps in each luminaire powered from a single ballast contained in one of the luminaires.

TASK LIGHTING. Lighting designed to provide illumination over a relatively small task area without providing significant general surrounding lighting.

TERMINAL. A device by which energy from a system is finally delivered, e.g., registers, diffusers, lighting fixtures, faucets, etc.

THERMAL BLOCK. A collection of one or more HVAC zones grouped together for simulation purposes. Spaces need not be contiguous to be combined within a single thermal block.

THERMAL CONDUCTANCE. See “C-factor.”

THERMAL EFFICIENCY. For the purposes of this code, Thermal Efficiency shall be defined as included in the American National Standard Institute, Inc. standard ANSI Z 21.10.3-2001.

THERMAL RESISTANCE (R-VALUE). The reciprocal of the time rate of heat flow through a unit area induced by a unit temperature difference between two defined surfaces of material or construction under steady-state conditions. Units of R are h-ft²-°F/Btu.

THERMAL ENVELOPE. The primary insulation layer of a building; that part of the envelope that provides the greatest resistance to heat flow to or from the building.

THERMAL MASS. Materials with mass heat capacity and surface area capable of affecting building loads by storing and releasing heat as the interior and/or exterior temperature and radiant conditions fluctuate (see “Wall heat capacity”).

THERMAL MASS WALL INSULATION POSITION

1. **Exterior insulation position:** A wall having all or nearly all of its mass exposed to the room air with the insulation on the exterior of that mass.
2. **Integral insulation position:** A wall having mass exposed to both room and outside air with substantially equal amounts of mass on the inside and outside of the insulation layer.
3. **Interior insulation position:** A wall not meeting either of the above definitions, particularly a wall having most of its mass external to an insulation layer.

THERMOSTAT. An automatic control device used to maintain temperature at a fixed or adjustable set point.

THERMOSTATIC CONTROL. An automatic control device or system used to maintain temperature at a fixed or adjustable set point.

THROUGH-THE-WALL AIR CONDITIONER and HEAT PUMP. A central air conditioner or heat pump that is designed to be installed totally or partially within a fixed-size opening in an exterior wall; and

1. Is manufactured prior to January 23, 2010;
2. Is not weatherized;
3. Is clearly and permanently marked for installation-only through an exterior wall;

4. Has a rated cooling capacity no greater than 30,000 BTU/h;
5. Exchanges all of its outdoor air across a single surface of the equipment cabinet, and;
6. Has a combined outdoor air exchange area of less than 800 square inches (0.516 m²) (split systems) or less than 1,210 square inches (0.780 m²) (single packaged systems) as measured on the surface described in 5 above.

TINTED. As applied to fenestration: bronze, green, blue, or gray coloring that is integral with the glazing material. Tinting does not include surface applied films such as reflective coatings, applied either in the field or during the manufacturing process.

TOWNHOUSE. A single-family dwelling unit constructed in a series or group of attached units with property lines separating such units. For the purpose of this code, townhouses shall be considered multiple-family dwellings.

TRANSFER GRILLE. A louvered or perforated covering for an opening in an air passage through a wall or door allowing transport of return air from a separated conditioned space of a building to the space containing the air distribution system's primary return.

TRANSFORMER. A piece of electrical equipment used to convert electric power from one voltage to another voltage.

- (a) **Dry-type transformer:** A transformer in which the core and coils are in a gaseous or dry compound.
- (b) **Liquid-immersed transformer:** A transformer in which the core and coils are immersed in an insulating liquid.

U-FACTOR (THERMAL TRANSMITTANCE). Heat transmission in unit time through unit area of a material or construction and the boundary air films, induced by unit temperature difference between the environments on each side. Units of U are Btu/h-ft²-°F.

UNCONDITIONED SPACE. See "Space."

UNDER ATTIC. Location of ceiling area in residential occupancies where the roof assembly and ceiling assembly are separated by a continuous ventilated unconditioned space spanning the ceiling area. Scissors truss structures are considered under attic where a ventilated air space is provided.

UNENCLOSED SPACE. A space that is not an enclosed space.

UNIT ENERGY COSTS. Costs for units of energy or power purchased at the building site. These costs may include energy costs as well as costs for power demand as determined by the adopting authority.

UNITARY COOLING EQUIPMENT. One or more factory-made assemblies that normally include an evaporator or cooling coil and a compressor and condenser combination. Units that perform a heating function are also included.

UNITARY HEAT PUMP. One or more factory-made assemblies that normally include an indoor conditioning coil, compressor(s), and an outdoor refrigerant-to-air coil or refrigerant-to-water heat exchanger. These units provide both heating and cooling functions.

VARIABLE AIR VOLUME (VAV) SYSTEM. HVAC system that controls the dry-bulb temperature within a space by varying the volumetric flow of heated or cooled supply air to the space.

VENT DAMPER. A device intended for installation in the venting system of an individual, automatically operated, fossil fuel-fired appliance in the outlet or downstream of the appliance draft control device, which is designed to automatically open the venting system when the appliance is in operation and to automatically close off the venting system when the appliance is in a standby or shutdown condition.

VENTILATION. The process of supplying or removing air by natural or mechanical means to or from any space. Such air is not required to have been conditioned.

VENTILATION AIR. That portion of supply air which comes from outdoors, plus any cleaned recirculated air to maintain the desired quality of air within a designated space (see "Outdoor air").

VERTICAL FENESTRATION. See "Fenestration."

VISIBLE TRANSMITTANCE (VT). Transmittance of glazing material over the visible portion of solar spectrum.

VOLTAGE DROP. A decrease in voltage caused by losses in the lines connecting the power source to the load.

WALL. That portion of the building envelope, including opaque area and fenestration, that is vertical or tilted at an angle of 60 degrees from horizontal or greater. This includes above and below-grade walls, between floor spandrels, peripheral edges of floors, and foundation walls. For the purposes of determining building envelope requirements, the classifications are defined as follows:

- (a) **Above-grade wall:** A wall that is not a below-grade wall.
- (b) **Below-grade wall:** That portion of a wall in the building envelope that is entirely below the finish grade and in contact with the ground.
- (c) **Mass wall:** A wall with a heat capacity exceeding (1) 7 Btu/ft²-°F or (2) 5 Btu/ft²-°F provided that the wall has a material unit weight not greater than 120 lb/ft³ (1922 kg/m³).
- (d) **Metal building wall:** A wall whose structure consists of metal spanning members supported by steel structural members (i.e., does not include spandrel glass or metal panels in curtain wall systems).
- (e) **Steel-framed wall:** A wall with a cavity (insulated or otherwise) whose exterior surfaces are separated by steel framing members (i.e., typical steel stud walls and curtain wall systems).
- (f) **Wood-framed and other walls:** All other wall types, including wood stud walls.

WALL AREA, GROSS. The area of the wall measured on the exterior face from the top of the floor to the bottom of the roof.

WALL AREA - GROSS EXTERIOR. The gross area of exterior walls separating a conditioned space from the outdoors or from unconditioned spaces as measured on the exterior above grade. It consists of opaque wall areas including between floor

spandrels, peripheral edges of flooring, window areas including sash, and door areas.

WALL HEAT CAPACITY. The sum of the products of the mass of each individual material in the wall per unit area of wall surface times its individual specific heat, Btu/ft²°F (see “Thermal mass”).

WARM-UP. Increase in space temperature to occupied set point after a period of shutdown or setback.

WATER HEATER. Vessel in which water is heated and is withdrawn for use external to the system.

WATT. The electrical unit of power or rate of doing work. One watt = 0.00134 h.p.

WHOLE-HOUSE FAN. A mechanical ventilation system usually installed in the ceiling of a residence which is used to exhaust air from the interior of a building to an attic space with sufficient venting area to transfer the air to the outside.

FLORIDA BUILDING CODE

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