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§ 431.483 Definitions.

The definitions applicable to this subpart are defined in Section 2 “Glossary” of UL 1004-10:2020 (incorporated by reference, see § 431.482).

§ 431.484 Test procedure.

(a) *Scope.* Pursuant to section 343(a) of EPCA, this section provides the test procedures for measuring the efficiency of dedicated-purpose pool pump motors. (42 U.S.C. 6314) For purposes of this part and EPCA, the test procedures for measuring the efficiency of dedicated-purpose pool pump motors shall be the test procedure specified in paragraph (b) of this section.

(b) *Testing and calculations.* At such time as compliance is required with a labeling requirement or an energy conservation standard, the full-load efficiency of each dedicated-purpose pool pump motor model (inclusive of the drive, if the dedicated-purpose pool pump motor model is placed into commerce with a drive, or is unable to operate without the presence of a drive) is determined in accordance with CSA C747-09, Section 1.6 “Scope”, Section 3 “Definitions”, Section 4 “General requirements”, Section 5, “General test requirements”, and Section 6 “Test method” (incorporated by reference, see § 431.482).

PART 433—ENERGY EFFICIENCY STANDARDS FOR THE DESIGN AND CONSTRUCTION OF NEW FEDERAL COMMERCIAL AND MULTI-FAMILY HIGH-RISE RESIDENTIAL BUILDINGS

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AUTHORITY: 42 U.S.C. 6831-6832, 6834-6835; 42 U.S.C. 7101 *et seq.*

SOURCE: 71 FR 70281, Dec. 4, 2006, unless otherwise noted.

§ 433.1 Purpose and scope.

(a) This part establishes an energy efficiency performance standard for the new Federal commercial and multi-family high-rise buildings, for which design for construction began on or after January 3, 2007, as required by section 305(a) of the Energy Conservation and Production Act, as amended (42 U.S.C. 6834(a)).

(b) [Reserved]

(c) This part also establishes green building certification requirements for new Federal buildings that are commercial and multi-family high-rise residential buildings and major renovations to Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after October 14, 2015.

[71 FR 70281, Dec. 4, 2006, as amended at 79 FR 61569, Oct. 14, 2014]

§ 433.2 Definitions.

For purposes of this part, the following terms, phrases and words are defined as follows:

ANSI means the American National Standards Institute.

ASHRAE means the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

ASHRAE Baseline Building 2004 means a building that is otherwise identical to the proposed building but is designed to meet, but not exceed, the energy efficiency specifications in ANSI/ASHRAE/IESNA Standard 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential Buildings, January 2004 (incorporated by reference, see § 433.3).

ASHRAE Baseline Building 2007 means a building that is otherwise identical to the proposed building but is designed to meet, but not exceed, the energy efficiency specifications in ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings Except

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Low-Rise Residential Buildings, December 2007 (incorporated by reference, see § 433.3).

ASHRAE Baseline Building 2010 means a building that is otherwise identical to the proposed building but is designed to meet, but not exceed, the energy efficiency specifications in ANSI/ASHRAE/IESNA Standard 90.1-2010, Energy Standard for Buildings Except Low-Rise Residential Buildings, 2010 (incorporated by reference, see § 433.3).

ASHRAE Baseline Building 2013 means a building that is otherwise identical to the proposed building but is designed to meet, but not exceed, the energy efficiency specifications in ASHRAE 90.1-2013 (incorporated by reference, see § 433.3).

ASHRAE Baseline Building 2019 means a building that is otherwise identical to the proposed building but is designed to meet, but not exceed, the energy efficiency specifications in ASHRAE 90.1-2019 (incorporated by reference, see § 433.3).

Commercial and multi-family high-rise residential building means all buildings other than low-rise residential buildings.

Design for construction means the stage when the energy efficiency and sustainability details (such as insulation levels, HVAC systems, water-using systems, etc.) are either explicitly determined or implicitly included in a project cost specification.

DOE means the U.S. Department of Energy.

Federal agency means any department, agency, corporation, or other entity or instrumentality of the executive branch of the Federal Government, including the United States Postal Service, the Federal National Mortgage Association, and the Federal Home Loan Mortgage Corporation.

IESNA means Illuminating Engineering Society of North America.

Life-cycle cost means the total cost related to energy conservation measures of owning, operating and maintaining a building over its useful life as determined in accordance with 10 CFR part 436.

Life-cycle cost-effective means that the proposed building has a lower life-cycle cost than the life-cycle costs of the baseline building, as described by 10

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CFR 436.19, or has a positive estimated net savings, as described by 10 CFR 436.20; or has a savings-to-investment ratio estimated to be greater than one, as described by 10 CFR 436.21; or has an adjusted internal rate of return, as described by 10 CFR 436.22, that is estimated to be greater than the discount rate as listed in OMB Circular Number A-94 (Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs)."

Low-rise residential building means any building three stories or less in height above grade that includes sleeping accommodations where the occupants are primarily permanent in nature (30 days or more).

New Federal building means any new building (including a complete replacement of an existing building from the foundation up) to be constructed by, or for the use of, any Federal agency. Such term shall include new buildings (including a complete replacement of an existing building from the foundation up) built for the purpose of being leased by a Federal agency, and privatized military housing.

Process load means the load on a building resulting from energy consumed in support of a manufacturing, industrial, or commercial process. Process loads do not include energy consumed maintaining comfort and amenities for the occupants of the building (including space conditioning for human comfort).

Proposed building means the building design of a new Federal commercial and multi-family high-rise building proposed for construction.

Receptacle load means the load on a building resulting from energy consumed by any equipment plugged into electrical outlets.

[71 FR 70281, Dec. 4, 2006, as amended at 72 FR 72570, Dec. 21, 2007; 76 FR 49284, Aug. 10, 2011; 78 FR 40953, July 9, 2013; 80 FR 68757, Nov. 6, 2015; 87 FR 20293, Apr. 7, 2022]

EDITORIAL NOTE: At 87 FR 20293, Apr. 7, 2022, § 433.2 was amended; however, a portion of the amendment could not be incorporated due to inaccurate amendatory instruction.

§ 433.3 Materials incorporated by reference.

(a) Certain material is incorporated by reference into this subpart with the

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approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, DOE must publish a document in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at DOE, and at the National Archives and Records Administration (NARA). Contact DOE at: The U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, Sixth Floor, 950 L'Enfant Plaza SW, Washington, DC 20024, (202) 586-9127, Buildings@ee.doe.gov, <https://www.energy.gov/eere/buildings/building-technologies-office>. For information on the availability of this material at NARA, email: fr.inspection@nara.gov, or go to: www.archives.gov/federal-register/cfr/ibr-locations.html. The material may be obtained from the sources in the following paragraphs of this section.

(b) ASHRAE. American Society of Heating Refrigerating and Air-Conditioning Engineers, Inc., 180 Technology Parkway NW, Peachtree Corners, GA 30092; (404) 636-8400; www.ashrae.org.

(1) ANSI/ASHRAE/IESNA 90.1-2004, (“ASHRAE 90.1-2004”), Energy Standard for Buildings Except Low-Rise Residential Buildings, January 2004, ISSN 1041-2336, IBR approved for §§ 433.2, 433.100, and 433.101;

(2) ANSI/ASHRAE/IESNA Standard 90.1-2007, (“ASHRAE 90.1-2007”), Energy Standard for Buildings Except Low-Rise Residential Buildings, 2007, ISSN 1041-2336, IBR approved for §§ 433.2, 433.100, and 433.101.

(3) ANSI/ASHRAE/IESNA 90.1-2010, (“ASHRAE 90.1-2010”), Energy Standard for Buildings Except Low-Rise Residential Buildings, I-P Edition, Copyright 2010, IBR approved for §§ 433.2, 433.100, and 433.101.

(4) ANSI/ASHRAE/IES 90.1-2013, (“ASHRAE 90.1-2013”), Energy Standard for Buildings Except Low-Rise Residential Buildings, I-P Edition, Copyright 2013, IBR approved for §§ 433.2, 433.100, and 433.101.

(5) ANSI/ASHRAE/IES 90.1-2019, (“ASHRAE 90.1-2019”), Energy Standard for Buildings Except Low-Rise Residential Buildings, I-P Edition, copy-

right 2019, IBR approved for §§ 433.2, 433.100 and 433.101.

[76 FR 49284, Aug. 10, 2011, as amended at 78 FR 40953, July 9, 2013; 79 FR 61569, Oct. 14, 2014; 80 FR 68757, Nov. 6, 2015; 87 FR 20294, Apr. 7, 2022]

§§ 433.4–433.7 [Reserved]

§ 433.8 Life-cycle costing.

Each Federal agency shall determine life-cycle cost-effectiveness by using the procedures set out in subpart A of part 436. A Federal agency may choose to use any of four methods, including lower life-cycle costs, positive net savings, savings-to-investment ratio that is estimated to be greater than one, and an adjusted internal rate of return that is estimated to be greater than the discount rate as listed in OMB Circular Number A-94 “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs.”

Subpart A—Energy Efficiency Performance

SOURCE: 79 FR 61569, Oct. 14, 2014, unless otherwise noted.

§ 433.100 Energy efficiency performance standard.

(a) (1) All Federal agencies shall design new Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after January 3, 2007, but before August 10, 2012, to:

(i) Meet ASHRAE 90.1-2004, (incorporated by reference, see § 433.3); and

(ii) If life-cycle cost-effective, achieve energy consumption levels, calculated consistent with paragraph (b) of this section, that are at least 30 percent below the levels of the ASHRAE Baseline Building 2004.

(2) All Federal agencies shall design new Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after August 10, 2012, but before July 9, 2014, to:

(i) Meet ASHRAE 90.1-2007, (incorporated by reference, see § 433.3); and

(ii) If life-cycle cost-effective, achieve energy consumption levels, calculated consistent with paragraph

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(b) of this section, that are at least 30 percent below the levels of the ASHRAE Baseline Building 2007.

(3) All Federal agencies shall design new Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after July 9, 2014, but before November 6, 2016 to:

(i) Meet ASHRAE 90.1–2010, (incorporated by reference, see § 433.3); and

(ii) If life-cycle cost-effective, achieve energy consumption levels, calculated consistent with paragraph (b) of this section, that are at least 30 percent below the levels of the ASHRAE Baseline Building 2010.

(4) All Federal agencies shall design new Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after November 6, 2016, but before April 7, 2023, to:

(i) Meet ASHRAE 90.1–2013, (incorporated by reference, see § 433.3); and

(ii) If LCC effective, achieve energy consumption levels, calculated consistent with paragraph (b) of this section, that are at least 30 percent below the levels of the ASHRAE Baseline Building 2013.

(5) All Federal agencies shall design new Federal buildings that are commercial and multi-family high-rise residential buildings, for which design for construction began on or after April 7, 2023, to:

(i) Meet ASHRAE 90.1–2019, (incorporated by reference, see § 433.3); and

(ii) If LCC effective, achieve energy consumption levels, calculated consistent with paragraph (b) of this section, that are at least 30 percent below the levels of the ASHRAE Baseline Building 2019.

(b) If a 30 percent reduction is not LCC effective, the design of the proposed building shall be modified so as to achieve an energy consumption level at or better than the maximum level of energy efficiency that is LCC effective, but at a minimum complies with paragraph (a) of this section.

[79 FR 61569, Oct. 14, 2014, as amended at 80 FR 68757, Nov. 6, 2015; 87 FR 20294, Apr. 7, 2022]

§ 433.101 Performance level determination.

(a)(1) For Federal buildings for which design for construction began on or after January 3, 2007, but before August 10, 2012, each Federal agency shall determine energy consumption levels for both the ASHRAE Baseline Building 2004 and proposed building by using the Performance Rating Method found in Appendix G of ASHRAE 90.1–2004 (incorporated by reference, see § 433.3), except the formula for calculating the Performance Rating in paragraph G1.2 shall read as follows:

(i) Percentage improvement = $100 \times ((\text{Baseline building consumption—Receptacle and process loads}) - (\text{Proposed building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$ (which simplifies as follows):

(ii) Percentage improvement = $100 \times ((\text{Baseline building consumption—Proposed building consumption}) - (\text{Baseline building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$.

(2) For Federal buildings for which design for construction began on or after August 10, 2012, but before July 9, 2014, each Federal agency shall determine energy consumption levels for both the ASHRAE Baseline Building 2007 and proposed building by using the Performance Rating Method found in Appendix G of ASHRAE 90.1–2007 (incorporated by reference, see § 433.3), except the formula for calculating the Performance Rating in paragraph G1.2 shall read as follows:

(i) Percentage improvement = $100 \times ((\text{Baseline building consumption—Receptacle and process loads}) - (\text{Proposed building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$ (which simplifies as follows):

(ii) Percentage improvement = $100 \times ((\text{Baseline building consumption—Proposed building consumption}) - (\text{Baseline building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$.

(3) For Federal buildings for which design for construction began on or after July 9, 2014, but before November 6, 2016 each Federal agency shall determine energy consumption levels for both the ASHRAE Baseline Building 2010 and proposed building by using the

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Performance Rating Method found in Appendix G of ASHRAE 90.1-2010 (incorporated by reference, see § 433.3), except the formula for calculating the Performance Rating in paragraph G1.2 shall read as follows:

(i) Percentage improvement = $100 \times ((\text{Baseline building consumption—Receptacle and process loads}) - (\text{Proposed building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$ (which simplifies as follows):

(ii) Percentage improvement = $100 \times (\text{Baseline building consumption—Proposed building consumption}) / (\text{Baseline building consumption—Receptacle and process loads})$.

(4) For Federal buildings for which design for construction began on or after November 6, 2016, but before April 7, 2023, each Federal agency shall determine energy consumption levels for both the ASHRAE Baseline Building 2013 and proposed building by using the Performance Rating Method found in Appendix G of ASHRAE 90.1-2013 (incorporated by reference, see § 433.3), except the formula for calculating the Performance Rating in Section G1.2 shall read as follows:

(i) Percentage improvement = $100 \times ((\text{Baseline building consumption—Receptacle and process loads}) - (\text{Proposed building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$ (which simplifies as follows):

(ii) Percentage improvement = $100 \times (\text{Baseline building consumption—Proposed building consumption}) / (\text{Baseline building consumption—Receptacle and process loads})$.

(5) For Federal buildings for which design for construction began on or after April 7, 2023, each Federal agency shall determine energy consumption levels for both the ASHRAE Baseline Building 2019 and proposed building by using the Performance Rating Method found in Appendix G of ASHRAE 90.1-2019 (incorporated by reference, see § 433.3). The formula for determining the percentage improvement shall be as follows:

$$\text{Percentage Improvement} = 100 \times (1 - \text{PCI}/\text{PCI}t)$$

Where

PCI = Performance Cost Index calculated in accordance with Section G1.2 of ASHRAE Standard 90.1-2019

PCI_t = Performance Cost Index Target calculated by formula in Section 4.2.1.1 of ASHRAE Standard 90.1-2019

(b) Energy consumption for the purposes of calculating the 30 percent savings requirements shall include the building envelope and energy consuming systems normally specified as part of the building design by ASHRAE Standard 90.1 such as space heating, space cooling, ventilation, service water heating, and lighting, and all process and receptacle loads, except for energy-intensive process loads that are driven by mission and operational requirements, not necessarily buildings, and not influenced by conventional building energy conservation measures.

[79 FR 61569, Oct. 14, 2014, as amended at 80 FR 68757, Nov. 6, 2015; 87 FR 20294, Apr. 7, 2022]

Subpart B—Reduction in Fossil Fuel-Generated Energy Consumption [Reserved]

Subpart C—Green Building Certification for Federal Buildings

§ 433.300 Green building certification.

(a) If a Federal agency chooses to use a green building certification system to certify a new Federal building or a Federal building undergoing a major renovation and such building is also either a public building (as defined in 40 U.S.C. 3301) for which transmittal of a prospectus to Congress is required under 40 U.S.C. 3307, or a Federal building for which estimated new building or major renovation design and construction costs are at least \$2,500,000 (in 2007 dollars, adjusted for inflation), and design for construction began on or after October 14, 2015.

(b) The system under which the building is certified must:

(1) Allow assessors and auditors to independently verify the criteria and measurement metrics of the system;

(2) Be developed by a certification organization that:

(i) Provides an opportunity for public comment on the system; and

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(ii) Provides an opportunity for development and revision of the system through a consensus-based process;

(3) Be nationally recognized within the building industry;

(4) Be subject to periodic evaluation and assessment of the environmental and energy benefits that result under the rating system; and

(5) Include a verification system for post-occupancy assessment of the rated buildings to demonstrate continued energy and water savings at least every four years after initial occupancy.

(c) *Certification level.* The building must be certified to a level that promotes the high performance sustainable building guidelines referenced in Executive Order 13423 “Strengthening Federal Environmental, Energy, and Transportation Management” and Executive Order 13514 “Federal Leadership in Environmental, Energy and Economic Performance.”

[79 FR 61570, Oct. 14, 2014]

**PART 434—ENERGY CODE FOR
NEW FEDERAL COMMERCIAL
AND MULTI-FAMILY HIGH RISE
RESIDENTIAL BUILDINGS**

Sec.

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AUTHORITY: 42 U.S.C. 6831–6832, 6834–6836; 42 U.S.C. 8253–54; 42 U.S.C. 7101, *et seq.*

SOURCE: 65 FR 60012, Oct. 6, 2000, unless otherwise noted.

§ 434.99 Explanation of numbering system for codes.

(a) For purposes of this part, a derivative of two different numbering systems will be used.

(1) For the purpose of designating a section, the system employed in the Code of Federal Regulations (CFR) will be employed. The number “434” which signifies part 434 in chapter II of Title 10, Code of Federal Regulations, is used