

## Department of Energy

## § 433.2

Disregard section C.3.5 of NSF/ANSI 50-2015 (incorporated by reference, see § 431.463).

### *G. Optional Testing and Calculations*

G.1 Replacement Dedicated-Purpose Pool Pump Motors. To determine the WEF for replacement DPPP motors, test each replacement DPPP motor paired with each dedicated-purpose pool pump bare pump for which the replacement DPPP motor is advertised to be paired, as stated in the manufacturer's literature for that replacement DPPP motor model, according to the testing and calculations described in sections A, B, C, D, and E of this appendix. Alternatively, each replacement DPPP motor may be tested with the most consumptive dedicated-purpose pool pump bare pump for which it is advertised to be paired, as stated in the manufacturer's literature for that replacement DPPP motor model. If a replacement DPPP motor is not advertised to be paired with any specific dedicated-purpose pool pump bare pumps, test with the most consumptive dedicated-purpose pool pump bare pump available.

[82 FR 36924, Aug. 7, 2017]

## **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 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/

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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 ANSI/ASHRAE/IES Standard 90.1–2013, Energy Standard for Buildings Except Low-Rise Residential Buildings, 2013 (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 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 building to be constructed on a site that previously did not have a building or a complete replacement of an existing building from the foundation up, by, or for the use of, any Federal agency which is not legally subject to State or local building codes or similar requirements.

*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]

#### § 433.3 Materials incorporated by reference.

(a) *General.* The Department of Energy incorporates by reference the energy performance standards listed in paragraph (b) of this section into 10 CFR part 433. The Director of the Federal Register has approved the material listed in paragraph (b) of this section for incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Any subsequent amendment to a standard by the standard-setting organization will not affect DOE regulations unless and until DOE amends its energy performance standards. Material is incorporated as it exists on the date of the approval, and a notice of any change in the material

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will be published in the FEDERAL REGISTER. All approved material is available for inspection 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) 586-2945. Also, this material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) *ASHRAE*. American Society of Heating Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329, (404) 636-8400; or go to, <http://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.

[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]

### §§ 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 (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.

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(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 to:

(i) Meet ASHRAE 90.1-2013, (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 2013.

(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 90.1 such as space heating, space cooling, ventilation, service water heating, and lighting, but shall not include receptacle and process loads not within the scope of ASHRAE 90.1 such as specialized medical or research equipment and equipment used in manufacturing processes.

(c) If a 30 percent reduction is not life-cycle cost-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 life-cycle cost-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]

### § 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 =  $100 \times ((\text{Baseline building consumption—Receptacle and process loads}) - (\text{Proposed building consumption—Receptacle and process loads})) / (\text{Baseline building consumption—Receptacle and process loads})$

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

(4) For Federal buildings for which design for construction began on or after before November 6, 2016 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 paragraph G1.2 shall read as follows:

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

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

(b) Energy consumption for the purposes of calculating the 30 percent savings requirements in §433.100 shall include the building envelope and energy consuming systems normally specified as part of the building design by ASHRAE 90.1 such as space heating, space cooling, ventilation, service water heating, and lighting, but shall not include receptacle and process loads not within the scope of ASHRAE 90.1 such as specialized medical or research equipment and equipment used in manufacturing processes.

[79 FR 61569, Oct. 14, 2014, as amended at 80 FR 68757, Nov. 6, 2015]

**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

(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.  
434.99 Explanation of numbering system for codes.

**Subpart A—Administration and Enforcement—General**

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434.101 Scope.  
434.102 Compliance.  
434.103 Referenced standards (RS).  
434.105 Materials and equipment.