(b) DOE must state any expenditure prohibitions or limitations specific to a particular category of special projects in the annual SEP special projects solicitation/guidance.

[64 FR 46114, Aug. 24, 1999]

PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT

AUTHORITY: 42 U.S.C. 6291–6317.

Source: 76 FR 12451, Mar. 7, 2011, unless otherwise noted.

Subpart A—General Provisions

§ 429.1   Purpose and scope.

This part sets forth the procedures to be followed for certification, determination and enforcement of compliance of covered products and covered equipment with the applicable conservation standards set forth in parts 430 and 431 of this subchapter. This part does not cover motors or electric motors as defined in § 431.12, and all references to ''covered equipment'' in this part exclude such motors.

§ 429.2   Definitions.

(a) The definitions found in §§ 430.2, 431.2, 431.62, 431.72, 431.82, 431.92, 431.102, 431.132, 431.152, 431.172, 431.192, 431.202, 431.222, 431.242, 431.262, 431.292, 431.302, 431.322, and 431.442 apply for purposes of this part.

(b) The following definitions apply for the purposes of this part. Any words or terms defined in this section or elsewhere in this part shall be defined as provided in sections 321 and 340 of the Energy Policy Conservation Act, as amended, hereinafter referred to as ''the Act.''

Energy conservation standard means any standards meeting the definitions of that term in 42 U.S.C. 6291(6) and 42 U.S.C. 6311(18) as well as any other water conservation standards and design requirements found in this part or parts 430 or 431.

Manufacturer's model number means the identifier used by a manufacturer to uniquely identify the group of identical or essentially identical covered products or covered equipment to which a particular unit belongs. The manufacturer's model number typically appears on the product nameplates, in product catalogs and in other product advertising literature.

§ 429.4   Materials incorporated by reference.

(a) General. We incorporate by reference the following standards into part 429. The material listed has been approved for incorporation by reference by the Director of the Federal Register 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 the DOE regulations unless and until amended by DOE. Material is incorporated as it exists on the date of the approval and a notice of any change in the material will be published in the FEDERAL REGISTER. All approved 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.* Also, this material is available for inspection at U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza, SW., Washington, DC 20024, (202) 586–2945, or go to: *http://www1.eere.energy.gov/buildings/ appliance_standards/.* Standards can be obtained from the sources below.

(b) *AHAM.* Association of Home Appliance Manufacturers, 1111 19th Street, NW., Suite 402, Washington, DC 20036, 202–872–5955, or go to *http:// www.aham.org.*

(1) ANSI/AHAM DW–1–1992, American National Standard, Household Electric Dishwashers, approved February 6, 1992, IBR approved for § 429.19.

(2) ANSI/AHAM DW–1–2010, *Household Electric Dishwashers,* (ANSI approved September 18, 2010), IBR approved for § 429.19.

(c) *ISO.* International Organization for Standardization, ch. de la Voie-Creuse CP 56 CH–1211 Geneva 20 Switzerland, telephone +41 22 749 01 11, or go to *http://www.iso.org/iso.*

(1) International Organization for Standardization (ISO)/International Electrotechnical Commission, (''ISO/ IEC 17025:2005(E)''), ''General requirements for the competence of testing and calibration laboratories'', Second edition, May 15, 2005, IBR approved for § 429.110.

(2) [Reserved]

[76 FR 12451, Mar. 7, 2011, as amended at 77 FR 65977, Oct. 31, 2012]

§ 429.5 Imported products.

(a) Any person importing any covered product or covered equipment into the United States shall comply with the provisions of this part, and parts 430 and 431, and is subject to the remedies of this part.

(b) Any covered product or covered equipment offered for importation in violation of this part, or part 430 or 431, shall be refused admission into the customs territory of the United States under rules issued by the U.S. Customs and Border Protection (CBP) and subject to further remedies as provided by law, except that CBP may, by such rules, authorize the importation of such covered product or covered equipment upon such terms and conditions (including the furnishing of a bond) as may appear to CBP appropriate to ensure that such covered product or covered equipment will not violate this part, or part 430 or 431, or will be exported or abandoned to the United States.

§ 429.6 Exported products.

This part, and parts 430 and 431, shall not apply to any covered product or covered equipment if:

(a) Such covered product or covered equipment is manufactured, sold, or held for sale for export from the United States or is imported for export;

(b) Such covered product or covered equipment or any container in which it is enclosed, when distributed in commerce, bears a stamp or label stating "NOT FOR SALE FOR USE IN THE UNITED STATES"; and

(c) Such product is, in fact, not distributed in commerce for use in the United States.

§ 429.7 Confidentiality.

(a) The following records are not exempt from public disclosure: The brand name, and applicable model number(s), and the energy or water rating submitted by manufacturers to DOE pursuant to § 429.19(b)(13).

(b) Pursuant to the provisions of 10 CFR 1004.11(e), any person submitting information or data which the person believes to be confidential and exempt by law from public disclosure should—at the time of submission—submit:

(1) One complete copy, and one copy from which the information believed to be confidential has been deleted.

(2) A request for confidentiality containing the submitter's views on the reasons for withholding the information from disclosure, including:

(i) A description of the items sought to be withheld from public disclosure,

(ii) Whether and why such items are customarily treated as confidential within the industry,

(iii) Whether the information is generally known by or available from other sources,

(iv) Whether the information has previously been made available to others without obligation concerning its confidentiality,

(v) An explanation of the competitive injury to the submitting person which would result from public disclosure,

(vi) A date upon which such information might lose its confidential nature due to the passage of time, and

(vii) Why disclosure of the information would be contrary to the public interest.

(c) In accordance with the procedures established in 10 CFR 1004.11(e), DOE shall make its own determination with regard to any claim that information submitted be exempt from public disclosure.

§ 429.8 Subpoena.

For purposes of carrying out parts 429, 430, and 431, the General Counsel (or delegee), may sign and issue subpoenas for the attendance and testimony of witnesses and the production of relevant books, records, papers, and other documents, and administer oaths. Witnesses summoned under the provisions of this section shall be paid the same fees and mileage as are paid to witnesses in the courts of the United States. In case of contumacy by, or refusal to obey a subpoena served, upon any persons subject to parts 429, 430, or 431, the General Counsel (or delegee) may seek an order from the District Court of the United States for any District in which such person is found or resides or transacts business requiring such person to appear and give testimony, or to appear and produce documents. Failure to obey such order is

punishable by such court as contempt thereof.

Subpart B—Certification

§ 429.10 Purpose and scope.

This subpart sets forth the procedures for manufacturers to certify that their covered products and covered equipment comply with the applicable energy conservation standards.

§ 429.11 General sampling requirements for selecting units to be tested.

(a) When testing of covered products or covered equipment is required to comply with section 323(c) of the Act, or to comply with rules prescribed under sections 324, 325, or 342, 344, 345 or 346 of the Act, a sample comprised of production units (or units representative of production units) of the basic model being tested shall be selected at random and tested, and shall meet the criteria found in §§ 429.14 through 429.54 of this subpart. Components of similar design may be substituted without additional testing if the substitution does not affect energy or water consumption. Any represented values of measures of energy efficiency, water efficiency, energy consumption, or water consumption for all individual models represented by a given basic model must be the same.

(b) Unless otherwise specified, the minimum number of units tested shall be no less than two (except where a different minimum limit is specified in §§ 429.14 through 429.54 of this subpart); and

§ 429.12 General requirements applicable to certification reports.

(a) *Certification.* Each manufacturer, before distributing in commerce any basic model of a covered product or covered equipment subject to an applicable energy conservation standard set forth in parts 430 or 431, and annually thereafter on or before the dates provided in paragraph (d) of this section, shall submit a certification report to DOE certifying that each basic model meets the applicable energy conservation standard(s). The certification report(s) must be submitted to DOE in

accordance with the submission procedures of paragraph (h) of this section.

(b) *Certification report.* A certification report shall include a compliance statement (*see* paragraph (c) of this section), and for each basic model, the information listed in this paragraph (b):

(1) Product or equipment type;

(2) Product or equipment class (as denoted in the provisions of part 430 or 431 containing the applicable energy conservation standard);

(3) Manufacturer's name and address;

(4) Private labeler's name(s) and address (if applicable);

(5) Brand name, if applicable;

(6) For each brand, the basic model number and the individual manufacturer's model numbers covered by that basic model with the following exceptions: For external power supplies that certify based on design families, the design family model number and the individual manufacturer's model numbers covered by that design family must be submitted for each brand. For walk-in coolers, the basic model number for each brand must be submitted. For distribution transformers, the basic model number or kVA grouping model number (depending on the certification method) for each brand must be submitted;

(7) Whether the submission is for a new model, a discontinued model, a correction to a previously submitted model, data on a carryover model, or a model that has been found in violation of a voluntary industry certification program;

(8) The test sample size (*i.e.*, number of units tested for each basic model);

(9) Certifying party's U.S. Customs and Border Protection (CBP) importer identification numbers assigned by CBP pursuant to 19 CFR 24.5, if applicable;

(10) Whether certification is based upon any waiver of test procedure requirements under § 430.27 or § 431.401 and the date of such waivers;

(11) Whether certification is based upon any exception relief from an applicable energy conservation standard and the date such relief was issued by DOE's Office of Hearing and Appeals;

(12) Whether certification is based upon the use of an alternate way of determining measures of energy conservation (*e.g.*, an ARM or AEDM), or other method of testing, for determining measures of energy conservation and the approval date, if applicable, of any such alternate rating, testing, or efficiency determination method; and

(13) Product specific information listed in §§ 429.14 through 429.54 of this part.

(c) *Compliance statement.* The compliance statement required by paragraph (b) of this section shall include the date, the name of the company official signing the statement, and his or her signature, title, address, telephone number, and facsimile number and shall certify that:

(1) The basic model(s) complies with the applicable energy conservation standard(s);

(2) All required testing has been conducted in conformance with the applicable test requirements prescribed in parts 429, 430 and 431, as appropriate, or in accordance with the terms of an applicable test procedure waiver;

(3) All information reported in the certification report is true, accurate, and complete; and

(4) The manufacturer is aware of the penalties associated with violations of the Act, the regulations thereunder, and 18 U.S.C. 1001 which prohibits knowingly making false statements to the Federal Government.

(d) *Annual filing.* All data required by paragraphs (a) through (c) shall be submitted to DOE annually, on or before the following dates:

Product category	Deadline for data submission
Fluorescent lamp ballasts, Medium base compact fluorescent lamps, Incandescent reflector lamps, General service fluorescent lamps, General service incandescent lamps, Intermediate base incandescent lamps, Candelabra base incandescent lamps, Residential ceiling fans, Residential ceiling fan light kits, Residential showerheads, Residential faucets, Residential water closets, and Residential urinals.	Mar. 1.
Residential water heater, Residential furnaces, Residential boilers, Residential pool heaters, Commercial water heaters, Commercial hot water supply boilers, Commercial unfired hot water storage tanks, Commercial packaged boilers, Commercial warm air furnaces, and Commercial unit heaters.	May 1
Residential dishwashers, Commercial prerinse spray valves, Illuminated exit signs, Traffic signal modules, Pedestrian modules, and Distribution transformers.	June 1.
Room air conditioners, Residential central air conditioners, Residential central heat pumps, Small duct high velocity system, Space constrained products, Commercial package air-conditioning and heating equipment, Packaged terminal air conditioners, Packaged terminal heat pumps, and Single package vertical units.	July 1.
Residential refrigerators, Residential refrigerators-freezers, Residential freezers, Commercial refrigerator, freezer, and refrigerator-freezer, Automatic commercial automatic ice makers, Refrigerated bottled or canned beverage vending machine, Walk-in coolers, and Walk-in freezers.	Aug. 1.
Torchieres, Residential dehumidifiers, Metal halide lamp fixtures, and External power supplies	Sept. 1.
Residential clothes washers, Residential clothes dryers, Residential direct heating equipment, Residential cooking products, and Commercial clothes washers.	Oct. 1.

(e) *New model filing.* (1) In addition to the annual filing schedule in paragraph (d) of this section, any new basic models must be certified pursuant to paragraph (a) of this section before distribution in commerce. A modification to a model that increases the model's energy or water consumption or decreases its efficiency resulting in re-rating must be certified as a new basic model pursuant to paragraph (a) of this section.

(2) For general service fluorescent lamps or incandescent reflector lamps: Prior to or concurrent with the distribution of a new basic model each manufacturer shall submit an initial certification report listing the basic model number, lamp wattage, and date of first manufacture (*i.e.*, production date) for that basic model. The certification report must also state how the manufacturer determined that the lamp meets or exceeds the energy conservation standards, including a description of any testing or analysis the manufacturer performed. Manufacturers of general service fluorescent lamps and incandescent reflector lamps shall submit the certification report required by paragraph (b) of this section within one year after the first date of new model manufacture.

(3) For distribution transformers, the manufacturer shall submit all information required in paragraphs (b) and (c) of this section for the new basic model, unless the manufacturer has previously submitted to the Department a certification report for a basic model of distribution transformer that is in the same kVA grouping as the new basic model.

(f) *Discontinued model filing.* When production of a basic model has ceased and it is no longer being sold or offered for sale by the manufacturer or private labeler, the manufacturer shall report this discontinued status to DOE as part of the next annual certification report following such cessation. For each basic model, the report shall include the information specified in paragraphs (b)(1) through (b)(7) of this section.

(g) *Third party submitters.* A manufacturer may elect to use a third party to submit the certification report to DOE (for example, a trade association, independent test lab, or other authorized representative, including a private labeler acting as a third party submitter on behalf of a manufacturer); however, the manufacturer is responsible for submission of the certification report to DOE. DOE may refuse to accept certification reports from third party submitters who have failed to submit reports in accordance with the rules of this part. The third party submitter must complete the compliance statement as part of the certification report. Each manufacturer using a third party submitter must have an authorization form on file with DOE. The authorization form includes a compliance statement, specifies the third party authorized to submit certification reports on the manufacturer's behalf and provides the contact information and signature of a company official.

(h) *Method of submission.* Reports required by this section must be submitted to DOE electronically at *http://www.regulations.doe.gov/ccms* (CCMS). A manufacturer or third party submitter can find product-specific templates for each covered product or covered equipment with certification requirements online at *https://www.regulations.doe.gov/ccms/templates.html.* Manufacturers and third party submitters must submit a reg-

istration form, signed by an officer of the company, in order to obtain access to CCMS.

(i) *Compliance dates.* For any product subject to an applicable energy conservation standard for which the compliance date has not yet occurred, a certification report must be submitted not later than the compliance date for the applicable energy conservation standard. The covered products enumerated below are subject to the stated compliance dates for initial certification:

(1) Commercial warm air furnaces, packaged terminal air conditioners, and packaged terminal heat pumps, July 1, 2014;

(2) Commercial gas-fired and oil-fired instantaneous water heaters less than 10 gallons and commercial gas-fired and oil-fired hot water supply boilers less than 10 gallons, October 1, 2014;

(3) All other types of covered commercial water heaters except those specified in paragraph (i)(2) of this section, commercial packaged boilers with input capacities less than or equal to 2.5 million Btu/h, and self-contained commercial refrigeration equipment with solid or transparent doors, December 31, 2014;

(4) Variable refrigerant flow air conditioners and heat pumps, March 31, 2015;

(5) Small, large, or very large air-cooled, water-cooled, evaporatively-cooled, and water-source commercial air conditioning and heating equipment, single package vertical units, computer room air conditioners, commercial packaged boilers with input capacities greater than 2.5 million Btu/h, and all other types of commercial refrigeration equipment except those specified in paragraph (i)(3) of this section, July 1, 2015.

[76 FR 12451, Mar. 7, 2011; 76 FR 24762, May 2, 2011, as amended at 76 FR 38292, June 30, 2011; 76 FR 65365, Oct. 21, 2011; 77 FR 76830, Dec. 31, 2012; 78 FR 79593, Dec. 31, 2013]

§ 429.13 Testing requirements.

(a) The determination that a basic model complies with an applicable energy conservation standard shall be determined from the values derived pursuant to the applicable testing and sampling requirements set forth in

parts 429, 430 and 431. The determination that a basic model complies with the applicable design standard shall be based upon the incorporation of specific design requirements in parts 430 and 431 or as specified in section 325 and 342 of the Act.

(b) Where DOE has determined a particular entity is in noncompliance with an applicable standard or certification requirement, DOE may impose additional testing requirements as a remedial measure.

§429.14 Residential refrigerators, refrigerator-freezers and freezers.

(a) *Sampling plan for selection of units for testing.*

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(1) The requirements of §429.11 are applicable to residential refrigerators, refrigerator-freezers and freezers; and

(2) For each basic model of residential refrigerators, refrigerator-freezers, and freezers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption, or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

and

(ii) Any represented value of the energy factor or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.*

(1) The requirements of § 429.12 are applicable to residential refrigerators, refrigerator-freezers and freezers; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The annual energy use in kilowatt hours per year (kWh/yr), total adjusted volume in cubic feet (cu ft), and measured height of the unit.

(3) Pursuant to § 429.12(b)(13), a certification report shall include the following additional product-specific information: whether the basic model has variable defrost control (in which case, manufacturers must also report the values, if any, of CT_L and CT_M (For an example, *see* section 5.2.1.3 in appendix A to subpart B of part 430) used in the calculation of energy consumption), whether the basic model has variable anti-sweat heater control (in which case, manufacturers must also report the values of heater Watts at the ten humidity levels 5%, 15%, through 95% used to calculate the variable anti-sweat heater "Correction Factor"), and whether testing has been conducted with modifications to the standard temperature sensor locations specified by the figures referenced in section 5.1 of appendices A1, B1, A, and B to subpart B of part 430.

[76 FR 12451, Mar. 7, 2011; 76 FR 24762, May 2, 2011]

§ 429.15   Room air conditioners.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to room air conditioners; and

(2) For each basic model of room air conditioners, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency ratio or other measure of energy consumption of a basic model

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to room air conditioners; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/W-h)), cooling capacity in British thermal units per hour (Btu/h), and the electrical power input in watts (W).

§ **429.16 Central air conditioners and heat pumps.**

(a) *Sampling plan for selection of units for testing.* (1) The general requirements of § 429.11 are applicable to central air conditioners and heat pumps; and

(2)(i) For central air conditioners and heat pumps, each single-package system and each condensing unit (outdoor unit) of a split-system, when combined with a selected evaporator coil (indoor unit) or a set of selected indoor units, must have a sample of sufficient size

tested in accordance with the applicable provisions of this subpart. The represented values for any model of a single-package system, any model of a tested split-system combination, any model of a tested mini-split system combination, or any model of a tested multi-split system combination must be assigned such that—

(A) Any represented value of annual operating cost, energy consumption or other measure of energy consumption of the central air conditioner or heat pump for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*2*) The upper 90 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(B) Any represented value of the energy efficiency or other measure of energy consumption of the central air conditioner or heat pump for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(*2*) The lower 90 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(C) For heat pumps, all units of the sample population must be tested in both the cooling and heating modes and the results used for determining the heat pump's certified Seasonal Energy Efficiency Ratio (SEER) and Heating Seasonal Performance Factor (HSPF) ratings in accordance with paragraph (a)(2)(i)(B) of this section.

(ii) For split-system air conditioners and heat pumps, the condenser-evaporator coil combination selected for tests pursuant to paragraph (a)(2)(i) of this section shall include the evaporator coil that is likely to have the largest volume of retail sales with the particular model of condensing unit. For mini-split condensing units that are designed to always be installed with more than one indoor unit, a "tested combination" as defined in 10 CFR 430.2 shall be used for tests pursuant to paragraph (a)(2)(i) of this section. For multi-split systems, each model of condensing unit shall be tested with two different sets of indoor units. For one set, a "tested combination" composed entirely of non-ducted indoor units shall be used. For the second set, a "tested combination" composed entirely of ducted indoor units shall be used. However, for any split-system air conditioner having a single-speed compressor, the condenser-evaporator coil combination selected for tests pursuant to paragraph (a)(2)(i) of this section shall include the indoor *coil-only* unit that is likely to have the largest volume of retail sales with the particular model of outdoor unit. This *coil-only* requirement does not apply to split-system air conditioners that are only sold and installed with *blower-coil* indoor units, specifically mini-splits, multi-splits, and through-the-wall units. This *coil-only* requirement does not apply to any split-system heat pumps. For every other split-system combination that includes the same model of condensing unit but a different model of evaporator coil and for every other mini-split and multi-split system that includes the same model of condensing unit but a different set of evaporator coils, whether the evaporator coil(s) is manufactured by the same manufacturer or by a component manufacturer, either—

(A) A sample of sufficient size, comprised of production units or representing production units, must be tested as complete systems with the resulting ratings for the outdoor unit-indoor unit(s) combination obtained in accordance with paragraphs (a)(2)(i)(A) and (a)(2)(i)(B) of this section; or

(B) The representative values of the measures of energy efficiency must be assigned as follows:

(*1*) Using an alternative rating method (ARM) that has been approved by DOE in accordance with the provisions of §429.70(e)(1) and (2); or

(*2*) For multi-split systems composed entirely of non-ducted indoor units, set equal to the system tested in accordance with paragraph (a)(2)(i) of this section whose tested combination was entirely non-ducted indoor units; or

(*3*) For multi-split systems composed entirely of ducted indoor units, set equal to the system tested in accordance with paragraph (a)(2)(i) of this section when the tested combination was entirely ducted indoor units; or

(*4*) For multi-split systems having a mix of non-ducted and ducted indoor units, set equal to the mean of the values for the two systems—one having the tested combination of all non-ducted units and the second having the tested combination of all ducted indoor

units—tested in accordance with paragraph (a)(2)(i) of this section.

(iii) Whenever the representative values of the measures of energy consumption, as determined by the provisions of paragraph (a)(2)(ii)(B) of this section, do not agree within 5 percent of the energy consumption as determined by actual testing, the values determined by actual testing must be used to comply with section 323(c) of the Act or to comply with rules under section 324 of the Act.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to central air conditioners and heat pumps; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Residential central air conditioners: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)), the cooling capacity in British thermal units per hour (Btu/h), and the manufacturer and individual manufacturer's model numbers of the indoor and outdoor unit. For central air conditioners whose seasonal energy efficiency ratio is based on an installation that includes a particular model of ducted air mover (*e.g.*, furnace, air handler, blower kit), the manufacturer's model number of this ducted air mover must be included among the model numbers listed on the certification report.

(ii) Residential central air conditioning heat pumps: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)), the cooling capacity in British thermal units per hour (Btu/h), the heating seasonal performance factor (HSPF in British thermal units per Watt-hour (Btu/W-h)), and the manufacturer and individual model numbers of the indoor and outdoor unit. For central air conditioning heat pumps whose seasonal energy efficiency ratio and heating seasonal performance factor are based on an installation that includes a particular model of ducted air mover (*e.g.*, furnace, air handler, blower kit), the model number of this ducted air mover must be included among the model numbers listed on the certification report.

(iii) Small duct, high velocity air conditioners: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)) and the cooling capacity in British thermal units per hour (Btu/h).

(iv) Small duct, high velocity heat pumps: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)), the heating seasonal performance factor (HSPF in British thermal units per Watt-hour (Btu/W-h)), and the cooling capacity in British thermal units per hour (Btu/h).

(iv) Space constrained air conditioners: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)) and the cooling capacity in British thermal units per hour (Btu/h).

(v) Space constrained heat pumps: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/W-h)), the coefficient of performance, and the cooling capacity in British thermal units per hour (Btu/h).

(c) *Alternative methods for determining efficiency or energy use* for central air conditioners and heat pumps can be found in § 429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24763, May 2, 2011]

§ 429.17 Residential water heaters.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to residential water heaters; and

(2) For each basic model of residential water heaters, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy factor or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to residential water heaters; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The energy factor (EF), rated storage volume in gallons (gal), first hour rating (maximum gallons per minute), and recovery efficiency (percent).

[76 FR 12451, Mar. 7, 2011; 76 FR 24764, May 2, 2011]

§ 429.18 Residential furnaces.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to residential furnaces; and

(2) (i) For each basic model of furnaces, other than basic models of those sectional cast-iron boilers (which may be aggregated into groups having identical intermediate sections and combustion chambers) a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(*2*) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(B) Any represented value of the annual fuel utilization efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(*2*) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(ii) For the lowest capacity basic model of a group of basic models of those sectional cast-iron boilers having identical intermediate sections and combustion chambers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(1) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(2) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(B) Any represented value of the fuel utilization efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(1) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(2) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(iii) For the highest capacity basic model of a group of basic models of those sectional cast-iron boilers having identical intermediate sections and combustion chambers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(1) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(2) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(B) Any represented value of the fuel utilization efficiency or other measure of energy consumption of a basic model

for which consumers would favor higher values shall be less than or equal to the lower of:

(1) The mean of the sample, where:

$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(*2*) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \overline{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(iv) For each basic model or capacity other than the highest or lowest of the group of basic models of sectional cast-iron boilers having identical intermediate sections and combustion chambers, represented values of measures of energy consumption shall be determined by either—

(A) A linear interpolation of data obtained for the smallest and largest capacity units of the family, or

(B) Testing a sample of sufficient size to ensure that:

(*1*) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*i*) The mean of the sample, where:

$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith

sample;

Or,

(*ii*) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the

number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed

confidence interval with n-1 degrees of freedom (from Appendix A).

and
(2) Any represented value of the energy factor or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith

sample;

Or,
(ii) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the

number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed

confidence interval with n-1 degrees of freedom (from Appendix A).

(v) Whenever measures of energy consumption determined by linear interpolation do not agree with measures of energy consumption determined by actual testing, the values determined by testing must be used for certification.
(vi) In calculating the measures of energy consumption for each unit tested, use the design heating requirement corresponding to the mean of the capacities of the units of the sample.
(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to residential furnaces; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Residential furnaces and boilers: The annual fuel utilization efficiency (AFUE) in percent (%) and the input capacity in British thermal units per hour (Btu/h).

(ii) For cast-iron sectional boilers: The type of ignition system for gas-fired steam and hot water boilers.

(3) Pursuant to §429.12(b)(13), a certification report shall include the following additional product-specific information: For cast-iron sectional boilers: a declaration of whether certification is based on linear interpolation or testing. For hot water boilers, a declaration that the manufacturer has incorporated the applicable design requirements.

[76 FR 12451, Mar. 7, 2011; 76 FR 24765, May 2, 2011, as amended at 76 FR 38292, June 30, 2011]

§429.19 Dishwashers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to dishwashers; and

(2) For each basic model of dishwashers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy or water consumption or other measure of energy or water consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \overline{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy or water factor or other measure of energy or water consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to dishwashers; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The estimated annual energy use in kilowatt hours per year (kWh/yr) and the water consumption in gallons per cycle.

(3) Pursuant to § 429.12(b)(13), a certification report shall include the following additional product-specific information when using appendix C or appendix C1: the capacity in number of place settings as specified in ANSI/AHAM DW–1–1992 when using appendix C (incorporated by reference, see § 429.4) and ANSI/AHAM DW–1–2010 when using appendix C1 (incorporated by reference, see § 429.4), presence of a soil sensor (if yes, the number of cycles required to reach calibration), and the water inlet temperature used for testing in degrees Fahrenheit (°F). When using appendix C1, additionally: the cycle selected for energy testing and whether that cycle is soil-sensing, the options selected for the energy test, and presence of a built-in water softening system (if yes, the energy use in kilowatt-hours and the water use in gallons required for each regeneration of the water softening system, the number of regeneration cycles per year, and data and calculations used to derive these values).

§ 429.20 Residential clothes washers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to residential clothes washers; and

(2) For each basic model of residential clothes washers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of the water factor, integrated water factor, the estimated annual operating cost, the energy or water consumption, or other measure of energy or water consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the modified energy factor, integrated modified energy factor, or other measure of energy or water consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to residential clothes washers; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

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(i) For residential clothes washers manufactured before March 7, 2015: The modified energy factor (MEF) in cubic feet per kilowatt hour per cycle (cu ft/kWh/cycle) and the capacity in cubic feet (cu ft). For standard-size residential clothes washers, a water factor (WF) in gallons per cycle per cubic feet (gal/cycle/cu ft).

(ii) For residential clothes washers manufactured on or after March 7, 2015: The integrated modified energy factor (IMEF) in cu ft/kWh/cycle, the integrated water factor (IWF) in gal/cycle/cu ft, the capacity in cu ft and the type of loading (top-loading or front-loading).

(3) Pursuant to § 429.12(b)(13), a certification report shall include the following additional product-specific information: When using appendix J2, a list of all cycle selections comprising the complete energy test cycle for each basic model.

§ 429.21 Residential clothes dryers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to clothes dryers; and

(2) For each basic model of clothes dryers a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975} \left(\frac{s}{\sqrt{n}} \right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy factor, combined energy factor, or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(3) The capacity of a basic model reported in accordance with paragraph (b)(2) of this section shall be the mean of the capacities measured for each tested unit of the basic model.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to clothes dryers; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: When using appendix D, the energy factor in pounds per kilowatt hours (lb/kWh), the capacity in cubic feet (cu ft), the voltage in volts (V) (for electric dryers only), an indication if the dryer has automatic termination controls, and the hourly British thermal unit (Btu) rating of the burner (for gas dryers only); when using appendix D1, the combined energy factor in pounds per kilowatt hours (lb/kWh), the capacity in cubic feet (cu ft), the voltage in volts (V) (for electric dryers only), an indication if the dryer has automatic termination controls, and the hourly Btu rating of the burner (for gas dryers only); when using appendix D2, the combined energy factor in pounds per kilowatt hours (lb/kWh),

the capacity in cubic feet (cu ft), the voltage in volts (V) (for electric dryers only), an indication if the dryer has automatic termination controls, the hourly Btu rating of the burner (for gas dryers only), and a list of the cycle setting selections for the energy test cycle as recorded in section 3.4.7 of appendix D2 to Subpart B of Part 430.

§ 429.22 **Direct heating equipment.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to direct heating equipment; and

(2) (i) For each basic model of direct heating equipment (not including furnaces) a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of estimated annual operating cost, energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(2) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

and

(B) Any represented value of the fuel utilization efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(1) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(2) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(ii) In calculating the measures of energy consumption for each unit tested, use the design heating requirement corresponding to the mean of the capacities of the units of the sample.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to direct heating equipment; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: Direct heating equipment, the annual fuel utilization efficiency (AFUE) in percent (%), the mean input capacity in British thermal units per hour (Btu/h), and the mean output capacity in British thermal units per hour (Btu/h).

[76 FR 12451, Mar. 7, 2011; 76 FR 24768, May 2, 2011, as amended at 76 FR 38292, June 30, 2011]

§429.23 **Conventional cooking tops, conventional ovens, microwave ovens.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to conventional cooking tops, conventional ovens and microwave ovens; and

(2) For each basic model of conventional cooking tops, conventional ovens and microwave ovens a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual operating cost, energy consumption, standby mode power consumption, off mode power consumption, or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy factor, integrated energy factor, or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

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$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to conventional cooking tops, conventional ovens and microwave ovens; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: For conventional cooking tops and conventional ovens: the type of pilot light and a declaration that the manufacturer has incorporated the applicable design requirements. For microwave ovens, the average standby power in watts.

[76 FR 12451, Mar. 7, 2011; 76 FR 24769, May 2, 2011, as amended at 77 FR 65977, Oct. 31, 2012; 78 FR 4025, Jan. 18, 2013; 78 FR 36368, June 17, 2013]

§ 429.24 Pool heaters.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to pool heaters; and

(2) For each basic model of pool heater a sample of sufficient size shall be randomly selected and tested to ensure that any represented value of the thermal efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

(i) The mean of the sample, where: Or,

(ii) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to pool heaters; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The thermal efficiency in percent (%) and the input capacity in British thermal units per hour (Btu/h).

[76 FR 12451, Mar. 7, 2011; 76 FR 24769, May 2, 2011]

§ 429.25 Television sets.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to televisions; and

(2) For each basic model of television, samples shall be randomly selected and tested to ensure that—

(i) Any represented value of power consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

and $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) For on mode power consumption, the upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{0.95}\left(\frac{s}{\sqrt{n}}\right)$$

and $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t-statistic for a 95% one-tailed confidence interval with n−1 degrees of freedom (from Appendix A of this subpart).

And

(C) For standby mode power consumption and power consumption measurements in modes other than on mode, the upper 90 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{0.90}\left(\frac{s}{\sqrt{n}}\right)$$

and $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t-statistic for a 90% one-tailed confidence interval with n−1 degrees of freedom (from Appendix A of this subpart).

(ii) Any represented annual energy consumption of a basic model shall be determined by applying the AEC calculation in section 8.2 of Appendix H to subpart B of 10 CFR Part 430 to the represented values of power consumption as calculated pursuant to paragraph (a)(2)(i) of this section.

(iii) *Rounding requirements.* The represented value of power consumption and the represented annual energy consumption shall be rounded as follows:

(A) For power consumption in the on, standby, and off modes, the represented value shall be rounded according to the accuracy requirements specified in section 3.3.3 of Appendix H to subpart B of 10 CFR Part 430.

(B) For annual energy consumption, the represented value shall be rounded according to the rounding requirements specified in section 8.3 of Appendix H to subpart B of 10 CFR Part 430.

(b) [Reserved]

[78 FR 63840, Oct. 25, 2013]

§ 429.26 Fluorescent lamp ballasts.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to fluorescent lamp ballasts; and

(2) For each basic model of fluorescent lamp ballasts, a sample of sufficient size, not less than four, shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated annual energy operating costs, energy consumption, or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 99 percent confidence limit (UCL) of the true mean divided by 1.01, where:

$$UCL = \bar{x} + t_{.99}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.99}$ is the t statistic for a 99% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the ballast efficacy factor or other measure of the energy consumption of a basic model for which consumers would favor a higher value shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 99 percent confidence limit (LCL) of the true mean divided by 0.99, where:

$$LCL = \bar{x} - t_{.99}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.99}$ is the t statistic for a 99% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to fluorescent lamp ballasts; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The ballast efficacy factor, the ballast power factor, the number of

lamps operated by the ballast, and the type of lamps operated by the ballast.

§ 429.27 **General service fluorescent lamps, general service incandescent lamps, and incandescent reflector lamps.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to general service fluorescent lamps, general service incandescent lamps and incandescent reflector lamps; and

(2)(i) For each basic model of general service fluorescent lamp and incandescent reflector lamp, samples of production lamps shall be obtained from a 12-month period, tested, and the results averaged. A minimum sample of 21 lamps shall be tested. The manufacturer shall randomly select a minimum of three lamps from each month of production for a minimum of 7 out of the 12-month period. In the instance where production occurs during fewer than 7 of such 12 months, the manufacturer shall randomly select 3 or more lamps from each month of production, where the number of lamps selected for each month shall be distributed as evenly as practicable among the months of production to attain a minimum sample of 21 lamps. Any represented value of lamp efficacy of a basic model shall be based on the sample and shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by .97, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(ii) For each basic model of general service fluorescent lamp and general service incandescent lamp, the color rendering index (CRI) shall be measured from the same lamps selected for the lumen output and watts input measurements in paragraphs (a)(2)(i) and (a)(2)(iii) of this section, *i.e.*, the manufacturer shall measure all lamps for lumens, watts input, and CRI. The CRI shall be represented as the average of a minimum sample of 21 lamps and shall be less than or equal to the lower of:

(A) The mean of the sample, where:

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$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by .97, where:

$$LCL = \overline{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(iii) For each basic model of general service incandescent lamp, for measurements of rated wattage and rated lumen output, samples of production lamps shall be obtained from a 12-month period, tested, and the results averaged. A minimum sample of 21 lamps shall be tested. The manufacturer shall randomly select a minimum of three lamps from each month of production for a minimum of 7 out of the 12-month period. In the instance where production occurs during fewer than 7 of such 12 months, the manufacturer shall randomly select 3 or more lamps from each month of production, where the number of lamps selected for each month shall be distributed as evenly as practicable among the months of production to attain a minimum sample of 21 lamps. Any represented value of rated wattage of a basic model shall be based on the sample and shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.03, where:

$$UCL = \overline{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

and $\overline{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A to this subpart).

(iv) For each basic model of general service incandescent lamp, for measurements of rated lifetime, a minimum

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sample of 21 lamps shall be tested. The manufacturer shall randomly select a minimum of three lamps from each month of production for a minimum of 7 out of the 12-month period. In the instance where production occurs during fewer than 7 of such 12 months, the manufacturer shall randomly select three or more lamps from each month of production, where the number of lamps selected for each month shall be distributed as evenly as practicable among the months of production to attain a minimum sample of 21 lamps. The lifetime shall be represented as the length of operating time between first use and failure of 50 percent of the sample size, in accordance with test procedures described in section 4.2 of Appendix R to subpart B of part 430 of this chapter. Compliance will be determined by the percentage of sample size that meets the minimum rated lifetime.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to general service fluorescent lamps, general service incandescent lamps and incandescent reflector lamps; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information:

(i) General service fluorescent lamps: the testing laboratory's National Voluntary Laboratory Accreditation Program (NVLAP) identification number or other NVLAP-approved accreditation identification, production dates of the units tested, the 12-month average lamp efficacy in lumens per watt (lm/W), lamp wattage (W), correlated color temperature in Kelvin (K), and the 12-

month average Color Rendering Index (CRI).

(ii) Incandescent reflector lamps: The laboratory's NVLAP identification number or other NVLAP-approved accreditation identification, production dates of the units tested, the 12-month average lamp efficacy in lumens per watt (lm/W), and lamp wattage (W).

(iii) General service incandescent lamps: The testing laboratory's National Voluntary Laboratory Accreditation Program (NVLAP) identification number or other NVLAP-approved accreditation identification, production dates of the units tested, the 12-month average maximum rate wattage in watts (W), the 12-month average minimum rated lifetime (hours), and the 12-month average Color Rendering Index (CRI).

(c) *Test data.* Manufacturers must include the production date codes and the accompanying decoding scheme corresponding to all of the units tested for a given basic model in the detailed test records maintained under § 429.71.

§ 429.28 Faucets.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to faucets; and

(2) For each basic model of faucet, a sample of sufficient size shall be randomly selected and tested to ensure that any represented value of water consumption of a basic model for which consumers favor lower values shall be no less than the higher of the higher of:

(i) The mean of the sample, where:

$$\overline{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\overline{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(ii) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to faucets; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: For non-metering faucets, the maximum water use in gallons per minute (gpm) rounded to the nearest 0.1 gallon; for metering faucets, the maximum water use in gallons per cycle (gal/cycle) rounded to the nearest 0.01 gallon; and for all faucet types, the flow water pressure in pounds per square inch (psi).

[76 FR 12451, Mar. 7, 2011; 76 FR 24771, May 2, 2011, as amended at 78 FR 62985, Oct. 23, 2013]

§ 429.29   Showerheads.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to showerheads; and

(2) For each basic model of a showerhead, a sample of sufficient size shall be randomly selected and tested to ensure that any represented value of water consumption of a basic model for which consumers favor lower values shall be greater than or equal to the higher of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(ii) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to showerheads; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The maximum water use in gallons per minute (gpm) rounded to the nearest 0.1 gallon, the maximum flow water pressure in pounds per square inch (psi), and a declaration that the showerhead meets the requirements of §430.32(p) pertaining to mechanical retention of the flow-restricting insert, if applicable.

[76 FR 12451, Mar. 7, 2011; 76 FR 24771, May 2, 2011, as amended at 78 FR 62985, Oct. 23, 2013]

§429.30 Water closets.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to water closets; and

(2) For each basic model of water closet, a sample of sufficient size shall be randomly selected and tested to ensure that any represented value of water consumption of a basic model for which consumers favor lower values shall be greater than or equal to the higher of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(ii) The upper 90 percent confidence limit (UCL) of the true mean divided by 1.1, where:

$$UCL = \bar{x} + t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to water closets; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The maximum water use in gallons per flush (gpf), rounded to the nearest 0.01 gallon. For dual-flush water closets, the maximum water use to be reported is the flush volume observed when tested in the full-flush mode.

[76 FR 12451, Mar. 7, 2011; 76 FR 24771, May 2, 2011, as amended at 78 FR 62986, Oct. 23, 2013]

§429.31 Urinals.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to urinals; and

(2) For each basic model of urinal, a sample of sufficient size shall be randomly selected and tested to ensure that any represented value of water consumption of a basic model for which consumers favor lower values shall be greater than or equal to the higher of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(ii) The upper 90 percent confidence limit (UCL) of the true mean divided by 1.1, where:

$$UCL = \bar{x} + t_{.90}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.90}$ is the t statistic for a 90% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to urinals; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The maximum water use in gallons per flush (gpf), rounded to the nearest 0.01 gallon, and for trough-type urinals, the maximum flow rate in gallons per minute (gpm), rounded to the nearest 0.01 gallon, and the length of the trough in inches (in).

[76 FR 12451, Mar. 7, 2011; 76 FR 24771, May 2, 2011, as amended at 78 FR 62986, Oct. 23, 2013]

§ 429.32 **Ceiling fans.**

(a) *Sampling plan for selection of units for testing.* The requirements of § 429.11 are applicable to ceiling fans.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to ceiling fans; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the fol-

lowing public product-specific information: The number of speeds within the ceiling fan controls and a declaration that the manufacturer has incorporated the applicable design requirements.

§ 429.33 **Ceiling fan light kits.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to ceiling fan light kits; and

(2) For each basic model of ceiling fan light kit with sockets for medium screw base lamps or pin-based fluorescent lamps selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any value of estimated energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.1, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and
(ii) Any represented value of the efficacy or other measure of energy consumption of a basic model for which

consumers would favor higher values shall be less than or equal to the lower of:
(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,
(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.9, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to ceiling fan light kits; and
(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:
(i) Ceiling fan light kits with sockets for medium screw base lamps: the rated wattage in watts (W) and the system's efficacy in lumens per watt (lm/W).
(ii) Ceiling fan light kits with pin-based sockets for fluorescent lamps: the rated wattage in watts (W), the system's efficacy in lumens per watt

(lm/W), and the length of the lamp in inches (in).
(iii) Ceiling fan light kits with any other socket type: the rated wattage in watts (W) and the number of individual sockets.
(3) Pursuant to §429.12(b)(13), a certification report shall include the following additional product-specific information: Ceiling fan light kits with any other socket type: a declaration that the basic model meets the applicable design requirement and the features that have been incorporated into

the ceiling fan light kit to meet the applicable design requirement (*e.g.*, circuit breaker, fuse, ballast).

§ 429.34 Torchieres.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to torchieres; and

(2) Reserved

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to torchieres; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following additional product-specific information: A declaration that the basic model meets the applicable design requirement and the features that have been incorporated into the torchiere to meet the applicable design requirement (*e.g.*, circuit breaker, fuse, ballast).

§ 429.35 Bare or covered (no reflector) medium base compact fluorescent lamps.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to bare or covered (no reflector) medium base compact fluorescent lamps; and

(2) For each basic model of bare or covered (no reflector) medium base compact fluorescent lamp

(i) No less than five units per basic model must be used when testing for the efficacy, 1,000-hour lumen maintenance, and the lumen maintenance. Each unit must be tested in the base-up position unless the product is labeled restricted by the manufacturer, in which case the unit should be tested in the manufacturer specified position. Any represented value of efficacy, 1,000-hour lumen maintenance, and lumen maintenance shall be based on a sample randomly selected and tested to ensure that the represented value is less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A).

(ii) No less than 6 unique units (*i.e.*, units that have not previously been tested) per basic model must be used when testing for the rapid cycle stress. Each unit can be tested in the base up or base down position as stated by the manufacturer.

(iii) No less than 10 units per basic model must be used when testing for the average rated lamp life. Half the sample should be tested in the base up

position and half of the sample should be tested in the base down position, unless specific use or position appears on the packaging of that particular unit.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to bare or covered medium base compact fluorescent lamps; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The testing laboratory's NVLAP identification number or other NVLAP-approved accreditation identification, the minimum initial efficacy in lumens per watt (lm/W), the lumen maintenance at 1,000 hours in percent (%), the lumen maintenance at 40 percent of rated life in percent (%), the rapid cycle stress test in number of units passed, and the lamp life in hours (h).

§ 429.36 Dehumidifiers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to dehumidifiers; and

(2) For each basic model of dehumidifier selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy factor, integrated energy factor, or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to dehumidifiers; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The energy factor in liters per kilowatt hour (liters/kWh) and capacity in pints per day.

[76 FR 12451, Mar. 7, 2011; 76 FR 24773, May 2, 2011, as amended at 77 FR 65977, Oct. 31, 2012]

§ 429.37 Class A external power supplies.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to external power supplies; and

(2) For each basic model of external power supply selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of the estimated energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97.5 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the estimated energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n}x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to external power supplies except that required information may be reported on the basis of a basic model or a design family. If certifying using a design family, for §429.12(b)(6), report the individual manufacturer's model numbers covered by the design family.

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

(i) External power supplies: The average active mode efficiency as a percent (%), no-load mode power consumption in watts (W), nameplate output power in watts (W), and, if missing from the nameplate, the output current in amperes (A) of the basic model or the output current in amperes (A) of the highest- and lowest-voltage models within the external power supply design family.

(ii) Switch-selectable single-voltage external power supplies: The average active mode efficiency as a percent (%), no-load mode power consumption in watts (W) at the lowest and highest selectable output voltage, nameplate

output power in watts (W), and, if missing from the nameplate, the output current in amperes (A).

(iii) External power supplies that are exempt from no-load mode requirements under § 430.32(w)(1)(iii): A statement that the product is designed to be connected to a security or life safety alarm or surveillance system component, the average active mode efficiency as a percent (%), the nameplate output power in watts (W), and if missing from the nameplate, the certification report must also include the output current in amperes (A) of the basic model or the output current in amperes (A) of the highest- and lowest-voltage models within the external power supply design family.

[76 FR 12451, Mar. 7, 2011; 76 FR 24773, May 2, 2011, as amended at 76 FR 57899, Sept. 19, 2011]

§ 429.38 Non-class A external power supplies. [Reserved]

§ 429.39 Battery chargers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to battery chargers; and

(2) For each basic model of battery charger selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of the estimated non-active energy ratio or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 97.5 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the estimated non-active energy ratio or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A of this part).

(b) *Certification reports.* [Reserved]

[76 FR 12451, Mar. 7, 2011; 76 FR 24774, May 2, 2011]

§ 429.40 Candelabra base incandescent lamps and intermediate base incandescent lamps.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to candelabra base incandescent lamps; and

(2) For each basic model of candelabra base incandescent lamp and intermediate base incandescent lamp, a minimum sample of 21 lamps shall be randomly selected and tested. Any represented value of lamp wattage of a basic model shall be based on the sample and shall be less than or equal to the lower of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(ii) The lower 97.5 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with n-1

degrees of freedom (from Appendix A of this part).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to candelabra base and intermediate base incandescent lamps; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Candelabra base incandescent lamp: The rated wattage in watts (W).

(ii) Intermediate base incandescent lamp: The rated wattage in watts (W).

[76 FR 12451, Mar. 7, 2011; 76 FR 24774, May 2, 2011]

§ 429.41 Electric motors. [Reserved]

§ 429.42 Commercial refrigerators, freezers, and refrigerator-freezers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to commercial refrigerators, freezers, and refrigerator-freezers; and

(2) For each basic model of commercial refrigerator, freezer, or refrigerator-freezer selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any value of estimated maximum daily energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the maximum of the ith sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

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$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to commercial refrigerators, freezers, and refrigerator-freezers; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Self-contained commercial refrigerators with solid doors, commercial refrigerators with transparent doors, commercial freezers with solid doors, and commercial freezers with transparent doors: the maximum daily energy consumption in kilowatt hours per day (kWh/day) and the chilled or frozen compartment volume in cubic feet (ft^3).

(ii) Self-contained commercial refrigerator-freezers with solids doors: the maximum average daily energy consumption in kilowatt hours per day (kWh/day) and the adjusted volume in cubic feet (ft^3).

(iii) Remote condensing commercial refrigerators, freezers, and refrigerator-freezers, self-contained commercial refrigerators, freezers, and refrigerator-freezers without doors, commercial ice-cream freezers, and commercial refrigeration equipment with two or more compartments (i.e., hybrid refrigerators, hybrid freezers, hybrid refrigerator-freezers, and non-hybrid refrigerator-freezers): The maximum daily energy consumption in kilowatt hours per day (kWh/day), the total display area (TDA) in feet squared (ft^2) or the chilled volume in cubic feet (ft^3) as necessary to demonstrate compliance with the standards set forth in §431.66, the rating temperature in degrees Fahrenheit (°F), the operating temperature range in degrees Fahrenheit (*e.g.,* ≥32 °F, <32 °F, and ≤−5 °F), the equipment family designation as described in §431.66, and the condensing unit configuration.

[76 FR 12451, Mar. 7, 2011; 76 FR 24775, May 2, 2011, as amended at 76 FR 38292, June 30, 2011]

EFFECTIVE DATE NOTE: At 78 FR 79593, Dec. 31, 2013, §429.42 was amended by revising paragraph (a), effective Jan. 30, 2014. For the convenience of the user, the revised text is set forth as follows:

§429.42 Commercial refrigerators, freezers, and refrigerator-freezers.

(a) *Determination of represented value.* Manufacturers can determine the represented value, which includes the certified rating, for each basic model of commercial refrigerator, freezer, or refrigerator-freezer either by testing, in conjunction with the applicable sampling provisions, or by applying an AEDM.

(1) *Units to be tested.* (i) If the represented value for a given basic model is determined through testing, the general requirements of §429.11 are applicable; and

(ii) For each basic model selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{0.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429); And,

(B) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{0.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429).

(2) *Alternative efficiency determination methods.* In lieu of testing, a represented value of efficiency or consumption for a basic model of commercial refrigerator, freezer or refrigerator-freezer must be determined through the application of an AEDM pursuant to the requirements of §429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM and less than or equal to the Federal standard for that basic model; and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM and

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greater than or equal to the Federal standard for that basic model.

* * * * *

§ 429.43 Commercial heating, ventilating, air conditioning (HVAC) equipment.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to commercial HVAC equipment; and

(2) For each basic model of commercial heating, ventilating, air conditioning (HVAC) equipment, efficiency must be determined either by testing, in accordance with applicable test procedures in §§ 431.76, 431.86, 431.96, or 431.106 and the provisions of this section, or by application of an alternative efficiency determination method (AEDM) that meets the requirements of § 429.48 and the provisions of this section. For each basic model of commercial HVAC equipment, a sample of sufficient size shall be selected and tested to ensure that—

(i) Any represented value of energy consumption or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to commercial HVAC equipment; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Commercial warm air furnaces: The thermal efficiency in percent (%) and the maximum rated input capacity in British thermal units per hour (Btu/h).

(ii) Commercial packaged boilers: The combustion efficiency in percent (%) and the maximum rated input capacity in British thermal unit per hour (Btu/h) for equipment manufactured before March 2, 2012. For equipment manufactured on or after March 2, 2012, either the combustion efficiency in percent (%), or the thermal efficiency in percent (%) as required in § 431.87 and the maximum rated input capacity in British thermal units per hour (Btu/h).

(iii) Commercial package air-conditioning and heating equipment (except small commercial package air conditioning and heating equipment that is air-cooled with a cooling capacity less than 65,000 Btu/h): the energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/Wh)), the coefficient of performance (COP) as necessary to meet the standards set forth in § 431.97, the cooling capacity in British thermal unit per hour (Btu/h), and the type of heating used by the unit.

(iv) Small commercial package air conditioning and heating equipment that is air-cooled with a cooling capacity less than 65,000 Btu/h: The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/Wh)), the heating seasonal performance factor (HSPF in British thermal units per Watt-hour(Btu/Wh)) as necessary to meet the standards set forth in § 431.97, and the cooling capacity in British thermal units per hour (Btu/h).

(v) Package terminal air conditioners: The energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/Wh)), the cooling capacity in British thermal units per hour (Btu/h), and the wall sleeve dimensions in inches (in).

(vi) Package terminal heat pumps: The energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/W-h)), the coefficient of performance (COP), the cooling capacity in British thermal units per hour (Btu/h), and the wall sleeve dimensions in inches (in).

(vii) Single package vertical air conditioner: The energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/Wh)) and the cooling capacity in British thermal units per hour (Btu/h).

(viii) Single package vertical heat pumps: The energy efficiency ratio (EER in British thermal units per Watt-hour (Btu/Wh)), the coefficient of performance (COP), and the cooling capacity in British thermal units per hour (Btu/h).

(c) Alternative methods for determining efficiency or energy use for commercial HVAC equipment can be found in § 429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24775, May 2, 2011]

EFFECTIVE DATE NOTE: At 78 FR 79594, Dec. 31, 2013, § 429.43 was amended by revising paragraph (a), effective Jan. 30, 2014. For the convenience of the user, the revised text is set forth as follows:

§ 429.43 Commercial heating, ventilating, air conditioning (HVAC) equipment.

(a) *Determination of represented value.* Manufacturers can determine the represented value, which includes the certified rating, for each basic model of commercial HVAC equipment either by testing, in conjunction with the applicable sampling provisions, or by applying an AEDM.

(1) *Units to be tested.* (i) If the represented value is determined through testing, the general requirements of § 429.11 are applicable; and

(ii) For each basic model selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429). And,

(B) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429).

(2) *Alternative efficiency determination methods.* In lieu of testing, a represented value of efficiency or consumption for a basic model of commercial HVAC equipment must be determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy use of

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a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM and less than or equal to the Federal standard for that basic model; and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM and greater than or equal to the Federal standard for that basic model.

*   *   *   *   *

§ 429.44 Commercial water heating equipment.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to commercial WH equipment; and

(2) For each basic model of commercial water heating (WH) equipment, efficiency must be determined either by testing, in accordance with applicable test procedures in §§ 431.76, 431.86, 431.96, or 431.106 and the provisions of this section, or by application of an alternative efficiency determination method (AEDM) that meets the requirements of § 429.48 and the provisions of this section. For each basic model of commercial WH equipment, a sample of sufficient size shall be selected and tested to ensure that—

(i) Any represented value of maximum standby loss or other measure of energy usage of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the maximum of the ith sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of minimum thermal efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the minimum of

the ith sample;

Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to commercial WH equipment; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

(i) Commercial electric storage water heaters: The maximum standby loss in percent per hour (%/hr), and the measured storage volume in gallons (gal).

(ii) Commercial gas-fired and oil-fired storage water heaters: The minimum thermal efficiency in percent (%), the maximum standby loss in British thermal units per hour (Btu/h), the rated storage volume in gallons (gal), the measured storage volume in gallons (gal) and the nameplate input rate in British thermal units per hour (Btu/h).

(iii) Commercial gas-fired and oil-fired instantaneous water heaters greater than or equal to 10 gallons and gas-fired and oil-fired hot water supply boilers greater than or equal to 10 gallons: the minimum thermal efficiency in percent (%), the maximum standby loss in British thermal units per hour (Btu/h), the rated storage volume in

gallons (gal), and the nameplate input rate in Btu/h.

(iv) Commercial gas-fired and oil-fired instantaneous water heaters less than 10 gallons and gas-fired and oil-fired hot water supply boilers less than 10 gallons: the minimum thermal efficiency in percent (%) and the storage volume in gallons (g).

(v) Commercial unfired hot water storage tanks: The minimum thermal insulation (*i.e.*, R-value) and the measured storage volume in gallons (gal).

(c) Alternative methods for determining efficiency or energy use for commercial WH equipment can be found in §429.70 of this subpart.

[76 FR 12451, Mar. 7, 2011; 76 FR 24776, May 2, 2011]

EFFECTIVE DATE NOTE: At 78 FR 79594, Dec. 31, 2013, §429.44 was amended by revising paragraph (a), effective Jan. 30, 2014. For the convenience of the user, the revised text is set forth as follows:

§429.44 Commercial water heating equipment.

(a) *Determination of represented value.* Manufacturers can determine the represented value, which includes the certified rating, for each basic model of commercial water

heating equipment, either by testing, in conjunction with the applicable sampling provisions, or by applying an AEDM.

(1) *Units to be tested.* (i) If the represented value for a given basic model is determined through testing, the general requirements of § 429.11 are applicable; and

(ii) For each basic model selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(A) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429). And,

(B) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(*1*) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

And, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; or,

(*2*) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% one-tailed confidence interval with n-1 degrees of freedom (from Appendix A to subpart B of part 429).

(2) *Alternative efficiency determination methods.* In lieu of testing, a represented value of efficiency or consumption for a basic model of commercial water heating equipment

must be determined through the application of an AEDM pursuant to the requirements of § 429.70 and the provisions of this section, where:

(i) Any represented value of energy consumption or other measure of energy use of a basic model for which consumers would favor lower values shall be greater than or equal to the output of the AEDM and less

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than or equal to the Federal standard for that basic model; and

(ii) Any represented value of energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the output of the AEDM and greater than or equal to the Federal standard for that basic model.

* * * * *

§429.45 Automatic commercial ice makers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to automatic commercial ice makers; and

(2) For each basic model of automatic commercial ice maker selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of maximum energy use or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to automatic commercial ice makers; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The maximum energy use in kilowatt hours per 100 pounds of ice (kWh/100 lbs ice), the maximum condenser water use in gallons per 100 pounds of ice (gal/100 lbs ice), the harvest rate in pounds of ice per 24 hours (lbs ice/24 hours), the type of cooling, and the equipment type.

[76 FR 12451, Mar. 7, 2011; 76 FR 24776, May 2, 2011]

§ 429.46 Commercial clothes washers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to commercial clothes washers; and

(2) For each basic model of commercial clothes washers, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of energy or water consumption or other measure of energy or water consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 97½ percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the modified energy factor, water factor, or other measure of energy or water consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(B) The lower 97½ percent confidence limit (LCL) of the true mean divided by 0.95, where:

$$LCL = \bar{x} - t_{.975}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.975}$ is the t statistic for a 97.5% one-tailed confidence interval with

n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to commercial clothes washers; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The modified energy factor (MEF) in cubic feet per kilowatt hour per cycle (cu ft/kWh/cycle) and the water factor in gallons per cubic feet per cycle (gal/cu ft/cycle) for units manufactured on or after January 8, 2013.

[76 FR 12451, Mar. 7, 2011; 76 FR 24777, May 2, 2011]

§429.47 **Distribution transformers.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to distribution transformers; and

(2) For each basic model of distribution transformer, efficiency must be determined either by testing, in accordance with §431.193 and the provisions of this section, or by application of an AEDM that meets the requirements of §429.70 and the provisions of this section.

(i) For each basic model selected for testing:

(A) If the manufacturer produces five or fewer units of a basic model over 6 months, each unit must be tested. A manufacturer may not use a basic model with a sample size of fewer than five units to substantiate an AEDM pursuant to §429.70.

(B) If the manufacturer produces more than five units over 6 months, a sample of at least five units must be selected and tested.

(ii) Any represented value of efficiency of a basic model must satisfy the condition:

$$RE \leq \frac{100}{1 + \left(\frac{100 - \bar{x}}{\bar{x}}\right)\left(\frac{\sqrt{n}}{\sqrt{n} + .08}\right)}$$

where $\bar{x}$ is the average efficiency of the sample.

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to distribution transformers except that required information in paragraph (b) of this section may be reported by kVA grouping instead of by basic model and paragraph (b)(6) of this section does not apply; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: For the most and least efficient basic models within each ''kVA grouping'' for which part 431 prescribes an efficiency standard, the kVA rating, the insulation type (*i.e.*, low-voltage dry-type, medium-voltage dry-type or liquid-immersed), the number of phases (*i.e.*, single-phase or three-phase), and the basic impulse insulation level (BIL) group rating (for medium-voltage dry-types).

(c) *Alternative methods for determining efficiency or energy use* for distribution transformers can be found in § 429.70 of this subpart.

(d) *Kilovolt ampere (kVA) grouping.* As used in this section, a ''kVA grouping'' is a group of basic models which all have the same kVA rating, have the same insulation type (*i.e.*, low-voltage dry-type, medium-voltage dry-type or liquid-immersed), have the same number of phases (*i.e.*, single-phase or three-phase), and, for medium-voltage dry-types, have the same BIL group rating (*i.e.*, 20–45 kV BIL, 46–95 kV BIL or greater than or equal to96 kV BIL).

§ 429.48 Illuminated exit signs.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to illuminated exit signs; and

(2) For each basic model of illuminated exit sign selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of input power demand or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A)The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to illuminated exit signs; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The input power demand in watts (W) and the number of faces.

[76 FR 12451, Mar. 7, 2011; 76 FR 24778, May 2, 2011]

§429.49 Traffic signal modules and pedestrian modules.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to traffic signal modules and pedestrian modules; and

(2) For each basic model of traffic signal module or pedestrian module selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of estimated maximum and nominal wattage or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample;
Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to traffic signal modules and pedestrian modules; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The maximum wattage at 74 degrees Celsius (°C) in watts (W), the nominal wattage at 25 degrees Celsius (°C) in watts (W), and the signal type.

[76 FR 12451, Mar. 7, 2011; 76 FR 24778, May 2, 2011]

§ 429.50 Commercial unit heaters.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to commercial unit heaters; and

(2) [Reserved]

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to commercial unit heaters; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The type of ignition system and a declaration that the manufacturer has incorporated the applicable design requirements.

§429.51 **Commercial pre-rinse spray valves.**

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to commercial pre-rinse spray valves; and

(2) For each basic model of commercial pre-rinse spray valves selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of water consumption or other measure of water consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the water efficiency or other measure of water consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to commercial pre-rinse spray valves; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The maximum flow rate in gallons per minute (gpm), rounded to the nearest 0.1 gallon.

[76 FR 12451, Mar. 7, 2011; 76 FR 24779, May 2, 2011, as amended at 78 FR 62986, Oct. 23, 2013]

§ 429.52 Refrigerated bottled or canned beverage vending machines.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of § 429.11 are applicable to refrigerated bottled or canned beverage vending machine; and

(2) For each basic model of refrigerated bottled or canned beverage vending machine selected for testing, a sample of sufficient size shall be randomly selected and tested to ensure that—

(i) Any represented value of energy consumption or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.10, where:

$$UCL = \bar{x} + t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of

samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-

1 degrees of freedom (from Appendix A).

and

(ii) Any represented value of the energy efficiency or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

(A) The mean of the sample, where:

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{x}$ is the sample mean; n is the number of samples; and x_i is the ith sample; Or,

(B) The lower 95 percent confidence limit (LCL) of the true mean divided by 0.90, where:

$$LCL = \bar{x} - t_{.95}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.95}$ is the t statistic for a 95% two-tailed confidence interval with n-1 degrees of freedom (from Appendix A).

(b) *Certification reports.* (1) The requirements of §429.12 are applicable to refrigerated bottled or canned beverage vending machine; and

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information: The maximum average daily energy consumption in kilowatt hours per day (kWh/day), the refrigerated volume (V) in cubic feet (ft³) used to demonstrate compliance with standards set forth in §431.296, the ambient temperature in degrees Fahrenheit (°F), and the ambient relative humidity in percent (%) during the test.

[76 FR 12451, Mar. 7, 2011; 76 FR 24779, May 2, 2011, as amended at 76 FR 38292, June 30, 2011]

§429.53 Walk-in coolers and walk-in freezers.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to walk-in coolers and freezers; and

(2) [Reserved]

(b) *Certification reports.* (1) Except that §429.12(b)(6) applies to the certified component, the requirements of §429.12 are applicable to manufacturers of the components of walk-in coolers and freezers (WICFs) listed in paragraph (b)(2) of this section, and;

(2) Pursuant to §429.12(b)(13), a certification report shall include the following public product-specific information:

(i) For WICF doors: The door type, R-value of the door insulation, and a declaration that the manufacturer has incorporated the applicable design requirements. In addition, for those WICFs with transparent reach-in doors and windows: The glass type of the doors and windows (*e.g.*, double-pane with heat reflective treatment, triple-pane glass with gas fill), and the power draw of the antisweat heater in watts per square foot of door opening.

(ii) For WICF panels: The R-value of the insulation (except for glazed portions of the doors or structural members)

(iii) For WICF fan motors: The motor purpose (*i.e.*, evaporator fan motor or condenser fan motor), the horsepower, and a declaration that the manufacturer has incorporated the applicable design requirements.

[76 FR 12451, Mar. 7, 2011, as amended at 76 FR 65365, Oct. 21, 2011]

§429.54 Metal halide lamp ballasts and fixtures.

(a) *Sampling plan for selection of units for testing.* (1) The requirements of §429.11 are applicable to metal halide lamp ballasts; and

(2) For each basic model of metal halide lamp ballast selected for testing, a

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sample of sufficient size, not less than four, shall be selected at random and tested to ensure that:

(i) Any represented value of estimated energy efficiency calculated as

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

and, $\bar{\bar{x}}$ is the sample mean; n is the number of samples; and x_i is the ith sample;

Or,

(B) The lower 99-percent confidence limit (LCL) of the true mean divided by 0.99.

$$LCL = \bar{x} - t_{.99}\left(\frac{s}{\sqrt{n}}\right)$$

And $\bar{x}$ is the sample mean; s is the sample standard deviation; n is the number of samples; and $t_{0.99}$ is the t statistic for a 99% two-tailed confidence interval with n–1 degrees of freedom (from appendix A).

(b) *Certification reports.* (1) The requirements of § 429.12 are applicable to metal halide lamp ballasts; and

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: The minimum ballast efficiency in percent (%), the lamp wattage in watts (W), and the type of ballast (*e.g.*, pulse-start, magnetic probe-start, and non-pulse start electronic).

[76 FR 12451, Mar. 7, 2011; 76 FR 24780, May 2, 2011; 76 FR 46202, Aug. 2, 2011]

§ 429.70 Alternative methods for determining energy efficiency or energy use.

(a) *General.* A manufacturer of commercial HVAC and WH equipment, distribution transformers, and central air conditioners and heat pumps may not distribute any basic model of such equipment in commerce unless the manufacturer has determined the energy efficiency of the basic model, either from testing the basic model or from applying an alternative method for determining energy efficiency or energy use (AEDM) to the basic model, in accordance with the requirements of

the measured output power to the lamp divided by the measured input power to the ballast (P_{out}/P_{in}), of a basic model is less than or equal to the lower of:

(A) The mean of the sample, where:

this section. In instances where a manufacturer has tested a basic model to validate the alternative method, the energy efficiency of that basic model must be determined and rated according to results from actual testing. In addition, a manufacturer may not knowingly use an AEDM to overrate the efficiency of a basic model. For each basic model of distribution transformer that has a configuration of windings that allows for more than one nominal rated voltage, the manufacturer must determine the basic model's efficiency either at the voltage at which the highest losses occur or at each voltage at which the transformer is rated to operate.

(b) *Testing.* Testing for each covered product or covered equipment must be done in accordance with the sampling plan provisions established in §§ 429.14 through 429.54 and the testing procedures in parts 430 and 431.

(c) *Alternative efficiency determination method (AEDM) for commercial HVAC and WH equipment*—(1) *Criteria an AEDM must satisfy.* A manufacturer may not apply an AEDM to a basic model to determine its efficiency pursuant to this section unless:

(i) The AEDM is derived from a mathematical model that represents the energy consumption characteristics of the basic model;

(ii) The AEDM is based on engineering or statistical analysis, computer simulation or modeling, or other analytic evaluation of performance data; and

(iii) The manufacturer has substantiated the AEDM, in accordance with paragraph (c)(2) of this section.

(2) *Substantiation of an AEDM.* Before using an AEDM, the manufacturer must substantiate and validate the AEDM as follows:

(i) A manufacturer must first apply the AEDM to three or more basic models that have been tested in accordance with §§ 431.173(b) and 431.175(a). The predicted efficiency calculated for each such basic model from application of the AEDM must be within five percent of the efficiency determined from testing that basic model, and the predicted efficiencies calculated for the tested basic models must, on average, be within one percent of the efficiencies determined from testing such basic models; and

(ii) Using the AEDM, the manufacturer must calculate the efficiency of three or more of its basic models. They must be the manufacturer's highest-selling basic models to which the AEDM could apply and different models than those used to develop the AEDM (*i.e.,* different models than those used in paragraph (c)(2)(i) of this section); and

(iii) The manufacturer must test each of these basic models in accordance with § 431.173(b), and either § 431.174(b) or 431.175(a), whichever is applicable; and

(iv) The predicted efficiency calculated for each such basic model from application of the AEDM must be within five percent of the efficiency determined from testing that basic model, and the average of the predicted efficiencies calculated for the tested basic models must be within one percent of the average of the efficiencies determined from testing these basic models.

(3) *Subsequent verification of an AEDM.* If a manufacturer has used an AEDM pursuant to this section,

(i) The manufacturer must have available for inspection by the Department records showing:

(A) The method or methods used;

(B) The mathematical model, the engineering or statistical analysis, computer simulation or modeling, and other analytic evaluation of performance data on which the AEDM is based;

(C) Complete test data, product information, and related information that the manufacturer generated or acquired under paragraph (c)(1) through (2) of this section; and

(D) The calculations used to determine the average efficiency and energy consumption of each basic model to which an AEDM was applied.

(ii) If requested by the Department, the manufacturer must perform at least one of the following:

(A) Conduct simulations to predict the performance of particular basic models of the commercial HVAC and WH product;

(B) Provide analyses of previous simulations conducted by the manufacturer;

(C) Conduct sample testing of basic models selected by the Department; or

(D) Conduct a combination of these.

(d) *Alternative efficiency determination method for distribution transformers*—A manufacturer may use an AEDM to determine the efficiency of one or more of its untested basic models only if it determines the efficiency of at least five of its other basic models (selected in accordance with paragraph (d)(3) of this section) through actual testing.

(1) *Criteria an AEDM must satisfy.*

(i) The AEDM has been derived from a mathematical model that represents the electrical characteristics of that basic model;

(ii) The AEDM is based on engineering and statistical analysis, computer simulation or modeling, or other analytic evaluation of performance data; and

(iii) The manufacturer has substantiated the AEDM, in accordance with paragraph (d)(2) of this section, by applying it to, and testing, at least five other basic models of the same type, *i.e.,* low-voltage dry-type distribution transformers, medium-voltage dry-type distribution transformers, or liquid-immersed distribution transformers.

(2) *Substantiation of an AEDM.* Before using an AEDM, the manufacturer must substantiate the AEDM's accuracy and reliability as follows:

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(i) Apply the AEDM to at least five of the manufacturer's basic models that have been selected for testing in accordance with paragraph (d)(3) of this section, and calculate the power loss for each of these basic models;

(ii) Test at least five units of each of these basic models in accordance with the applicable test procedure and §429.47, and determine the power loss for each of these basic models;

(iii) The predicted total power loss for each of these basic models, calculated by applying the AEDM pursuant to paragraph (d)(2)(i) of this section, must be within plus or minus five percent of the mean total power loss determined from the testing of that basic model pursuant to paragraph (d)(2)(ii) of this section; and

(iv) Calculate for each of these basic models the percentage that its power loss calculated pursuant to paragraph (d)(2)(i) of this section is of its power loss determined from testing pursuant to paragraph (d)(2)(ii) of this section, compute the average of these percentages, and that calculated average power loss, expressed as a percentage of the average power loss determined from testing, must be no less than 97 percent and no greater than 103 percent.

(3) *Additional testing requirements.* (i) A manufacturer must select basic models for testing in accordance with the following criteria:

(A) Two of the basic models must be among the five basic models with the highest unit volumes of production by the manufacturer in the prior year, or during the prior 12-calendar-month period beginning in 2003,[1] whichever is later;

(B) No two basic models should have the same combination of power and voltage ratings; and

(C) At least one basic model should be single-phase and at least one should be three-phase.

(ii) In any instance where it is impossible for a manufacturer to select basic models for testing in accordance with all of these criteria, the criteria shall

[1] When identifying these five basic models, any basic model that does not comply with Federal energy conservation standards for distribution transformers that may be in effect shall be excluded from consideration.

be given priority in the order in which they are listed. Within the limits imposed by the criteria, basic models shall be selected randomly.

(4) *Subsequent verification of an AEDM.* (i) Each manufacturer that has used an AEDM under this section shall have available for inspection by the Department of Energy records showing:

(A) The method or methods used;

(B) The mathematical model, the engineering or statistical analysis, computer simulation or modeling, and other analytic evaluation of performance data on which the AEDM is based;

(C) Complete test data, product information, and related information that the manufacturer has generated or acquired pursuant to paragraph (d)(4) of this section; and

(D) The calculations used to determine the efficiency and total power losses of each basic model to which the AEDM was applied.

(ii) If requested by the Department, the manufacturer must perform at least one of the following:

(A) Conduct simulations to predict the performance of particular basic models of distribution transformers specified by the Department;

(B) Provide analyses of previous simulations conducted by the manufacturer;

(C) Conduct sample testing of basic models selected by the Department; or

(D) Conduct a combination of these.

(e) *Alternate Rating Method (ARM) for residential split-system central air conditioners and heat pumps—*

(1) *Criteria an ARM must satisfy.* The basis of the ARM referred to in §429.16(a)(2)(ii) for residential central air conditioners and heat pumps must be a representation of the test data and calculations of a mechanical vapor-compression refrigeration cycle. The major components in the refrigeration cycle must be modeled as "fits" to manufacturer performance data or by graphical or tabular performance data. Heat transfer characteristics of coils may be modeled as a function of face area, number of rows, fins per inch, refrigerant circuitry, air-flow rate and entering-air enthalpy. Additional performance-related characteristics to be considered may include type of expansion device, refrigerant flow rate

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through the expansion device, power of the indoor fan and cyclic-degradation coefficient. Ratings for untested combinations must be derived from the ratings of a combination tested in accordance with § 429.16(a)(2)(i). The seasonal energy efficiency ratio (SEER) and/or heating seasonal performance factor (HSPF) ratings for an untested combination must be set equal to or less than the lower of the SEER and/or HSPF calculated using the applicable DOE-approved alternative rating method (ARM). If the method includes an ARM/simulation adjustment factor(s), determine the value(s) of the factors(s) that yield the best match between the SEER/HSPF determined using the ARM versus the SEER/HSPF determined from testing in accordance with § 429.16(a)(2)(i). Thereafter, apply the ARM using the derived adjustment factor(s) only when determining the ratings for untested combinations having the same outdoor unit.

(2) *Approval of an ARM.* (i) Manufacturers who elect to use an ARM for determining measures of energy consumption under § 429.16(a)(2)(ii)(B)(1) and paragraph (e)(1) of this section must submit a request for DOE to review the ARM. Send the request to: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program (EE–2J), Attention: Alternative Rating Methods (ARM) for Certification and Compliance, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC 20585–0121.

(ii) Each request to DOE for approval of an ARM must include:

(A) The name, mailing address, telephone number, and e-mail address of the official representing the manufacturer.

(B) Complete documentation of the alternative rating method to allow DOE to evaluate its technical adequacy. The documentation must include a description of the methodology, state any underlying assumptions, and explain any correlations. The documentation should address how the method accounts for the cyclic-degradation coefficient, the type of expansion device, and, if applicable, the indoor fan-off delay. The requestor must submit any computer programs—in- cluding spreadsheets—having less than 200 executable lines that implement the ARM. Longer computer programs must be identified and sufficiently explained, as specified above, but their inclusion in the initial submittal package is optional. Applicability or limitations of the ARM (*e.g.,* only covers single-speed units when operating in the cooling mode, covers units with rated capacities of 3 tons or less, not applicable to the manufacturer's product line of non-ducted systems) must be stated in the documentation.

(C) Complete test data from laboratory tests on four mixed (*i.e.,* non-highest-sales-volume combination) systems per each ARM.

(*1*) The four mixed systems must include four different indoor units and at least two different outdoor units. A particular model of outdoor unit may be tested with up to two of the four indoor units. The four systems must include two low-capacity mixed systems and two high-capacity mixed systems. The low-capacity mixed systems may have any capacity. The rated capacity of each high-capacity mixed system must be at least a factor of two higher than its counterpart low-capacity mixed system. The four mixed systems must meet the applicable energy conservation standard in § 430.32(c) in effect at the time of the rating.

(*2*) The four indoor units must come from at least two different coil families, with a maximum of two indoor units coming from the same coil family. Data for two indoor units from the same coil family, if submitted, must come from testing with one of the ''low-capacity mixed systems'' and one of the ''high-capacity mixed systems.'' A mixed system indoor coil may come from the same coil family as the highest-sales-volume-combination indoor unit (*i.e.,* the ''matched'' indoor unit) for the particular outdoor unit. Data on mixed systems where the indoor unit is now obsolete will be accepted towards the ARM-validation submittal requirement if it is from the same coil family as other indoor units still in production.

(*3*) The first two sentences of paragraph (e)(2)(ii)(C)(*2*) of this section do not apply if the manufacturer offers indoor units from only one coil family. In

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this case only, all four indoor coils must be selected from this one coil family. If approved, the ARM will be specifically limited to applications for this one coil family.

(D) All product information on each mixed system indoor unit, each matched system indoor unit, and each outdoor unit needed to implement the proposed ARM. The calculated ratings for the four mixed systems, as determined using the proposed ARM, must be provided along with any other related information that will aid the verification process.

(E) If request for approval is for an updated ARM, manufacturers must identify modifications made to the ARM since the last submittal, including any ARM/simulation adjustment factor(s) added since the ARM was last approved by DOE.

(iii) Approval must be received from the Department to use the ARM before the ARM may be used for rating split-system central air conditioners and heat pumps. If a manufacturer has a DOE-approved ARM for products also distributed in commerce by a private labeler, the ARM may also be used by the private labeler for rating these products. Once an ARM is approved, DOE may contact a manufacturer to learn if their ARM has been modified in any way and to verify that the ARM is being applied as approved. DOE will give follow-up priority to individual combinations having questionably high ratings (*e.g.*, a coil-only system having a rating that exceeds the rating of a coil-only highest sales volume combination by more than 6 percent).

(3) *Changes to DOE's regulations requiring re-approval of an ARM.* Manufacturers who elect to use an ARM for determining measures of energy consumption under §429.16(a)(2)(ii)(B)(*1*) and paragraph (e)(1) of this section must submit a request for DOE to review the ARM when:

(i) DOE amends the energy conservation standards as specified in §430.32 for residential central air conditioners and heat pumps. In this case, any testing and evidence required under paragraph (e)(2) of this section shall be developed with units that meet the amended energy conservation standards specified in §430.32. Re-approval

for the ARM must be obtained before the compliance date of amended energy conservation standards. (ii) DOE amends the test procedure for residential air conditioners and heat pumps as specified in appendix M to subpart B of part 430. Re-approval for the ARM must be obtained before the compliance date of amended test procedures.

(4) Manufacturers that elect to use an ARM for determining measures of energy consumption under §429.16(a)(2)(ii)(B)(*1*) and paragraph (e)(1) of this section must regularly either subject a sample of their units to independent testing, *e.g.*, through a voluntary certification program, in accordance with the applicable DOE test procedure, or have the representations reviewed by an independent state-registered professional engineer who is not an employee of the manufacturer. The manufacturer may continue to use the ARM only if the testing establishes, or the registered professional engineer certifies, that the results of the ARM accurately represent the energy consumption of the unit(s). Any proposed change to the alternative rating method must be approved by DOE prior to its use for rating.

(5) Manufacturers who choose to use computer simulation or engineering analysis for determining measures of energy consumption under §429.16(a)(2)(ii)(B)(*1*) and paragraphs (e)(1) through (e)(4) of this section must permit representatives of the Department of Energy to inspect for verification purposes the simulation method(s) and computer program(s) used. This inspection may include conducting simulations to predict the performance of particular outdoor unit ''indoor'' unit combinations specified by DOE, analysis of previous simulations conducted by the manufacturer, or both.

[76 FR 12451, Mar. 7, 2011; 76 FR 24780, May 2, 2011]

Effective Date Note: At 78 FR 79595, Dec. 31, 2013, §429.70 was amended by revising paragraphs (a), (b), and (c), effective Jan. 30, 2014. For the convenience of the user, the revised text is set forth as follows:

§ 429.70 Alternative methods for determining energy efficiency and energy use.

(a) *General applicability of an AEDM.* A manufacturer of covered products or covered

equipment explicitly authorized to use an AEDM in §§ 429.14 through 429.54 may not distribute any basic model of such equipment in commerce unless the manufacturer has determined the energy efficiency of the basic model, either from testing the basic model in conjunction with DOE's certification sampling plans and statistics or from applying an alternative method for determining energy efficiency or energy use (AEDM) to the basic model, in accordance with the requirements of this section. In instances where a manufacturer has tested a basic model, the manufacturer may not knowingly use an AEDM to overrate the efficiency (or underrate the consumption) of the model.

(b) *Testing.* Testing for each covered product or covered equipment must be done in accordance with the sampling plan provisions established in § 429.11 and the testing procedures in parts 430 and 431 of this chapter.

(c) *Alternative efficiency determination method (AEDM) for commercial HVAC, WH, and refrigeration equipment*— (1) *Criteria an AEDM must satisfy.* A manufacturer may not apply an AEDM to a basic model to determine its efficiency pursuant to this section unless:

(i) The AEDM is derived from a mathematical model that estimates the energy efficiency or energy consumption characteristics of the basic model as measured by the applicable DOE test procedure;

(ii) The AEDM is based on engineering or statistical analysis, computer simulation or modeling, or other analytic evaluation of performance data; and

(iii) The manufacturer has validated the AEDM, in accordance with paragraph (c)(2) of this section with basic models that meet the current Federal energy conservation standards.

(2) *Validation of an AEDM.* Before using an AEDM, the manufacturer must validate the AEDM's accuracy and reliability as follows:

(i) The manufacturer must select at least the minimum number of basic models for each validation class specified in paragraph (c)(2)(iv) of this section to which the particular AEDM applies. Using the AEDM, calculate the energy use or efficiency for each of the selected basic models. Test a single unit of each selected basic model in accordance with paragraph (c)(2)(iii) of this section. Compare the results from the single unit test and the AEDM energy use or efficiency output according to paragraph (c)(2)(ii) of this section. The manufacturer is responsible for ensuring the accuracy and reliability of the AEDM.

(ii) *Individual model tolerances.* (A) For those covered products with an energy-efficiency metric, the predicted efficiency for each model calculated by applying the AEDM may not be more than five percent greater than the efficiency determined from the corresponding test of the model.

(B) For those covered products with an energy-consumption metric, the predicted energy consumption for each model, calculated by applying the AEDM, may not be more than five percent less than the energy consumption determined from the corresponding test of the model.

(C) For all covered products, the predicted energy efficiency or consumption for each model calculated by applying the AEDM must meet or exceed the applicable federal energy conservation performance standard.

(iii) *Additional test unit requirements.* (A) Each AEDM must be supported by test data obtained from physical tests of current models; and

(B) Test results used to validate the AEDM must meet or exceed current, applicable Federal standards as specified in part 431 of this chapter; and

(C) Each test must have been performed in accordance with the DOE test procedure specified in parts 430 or 431 of this chapter or test procedure waiver for which compliance is required at the time the basic model is distributed in commerce.

(iv) *Validation classes.*

Validation class	Minimum number of distinct models that must be tested per AEDM
Air-Cooled, Split and Packaged Air Conditioners (ACs) and Heat Pumps (HPs) less than 65,000 Btu/h Cooling Capacity (3-Phase).	2 Basic Models.
(A) Commercial HVAC validation classes	
Air-Cooled, Split and Packaged ACs and HPs greater than or equal to 65,000 Btu/h Cooling Capacity and Less than 760,000 Btu/h Cooling Capacity.	2 Basic Models.
Water-Cooled, Split and Packaged ACs and HPs, All Cooling Capacities	2 Basic Models.
Evaporatively-Cooled, Split and Packaged ACs and HPs, All Capacities	2 Basic Models.
Water-Source HPs, All Capacities	2 Basic Models.
Single Package Vertical ACs and HPs	2 Basic Models.
Packaged Terminal ACs and HPs	2 Basic Models.
Air-Cooled, Variable Refrigerant Flow ACs and HPs	2 Basic Models.
Water-Cooled, Variable Refrigerant Flow ACs and HPs	2 Basic Models.
Computer Room Air Conditioners, Air Cooled	2 Basic Models.
Computer Room Air Conditioners, Water-Cooled	2 Basic Models.

Validation class	Minimum number of distinct models that must be tested per AEDM
(B) Commercial water heater validation classes	
Gas-fired Water Heaters and Hot Water Supply Boilers Less than 10 Gallons	2 Basic Models.
Gas-fired Water Heaters and Hot Water Supply Boilers Greater than or Equal to 10 Gallons	2 Basic Models.
Oil-fired Water Heaters and Hot Water Supply Boilers Less than 10 Gallons	2 Basic Models.
Oil-fired Water Heaters and Hot Water Supply Boilers Greater than or Equal to 10 Gallons	2 Basic Models.
Electric Water Heaters	2 Basic Models.
Heat Pump Water Heaters	2 Basic Models.
Unfired Hot Water Storage Tanks	2 Basic Models.
(C) Commercial packaged boilers validation classes	
Gas-fired, Hot Water Only Commercial Packaged Boilers	2 Basic Models.
Gas-fired, Steam Only Commercial Packaged Boilers	2 Basic Models.
Gas-fired Hot Water/Steam Commercial Packaged Boilers	2 Basic Models.
Oil-fired, Hot Water Only Commercial Packaged Boilers	2 Basic Models.
Oil-fired, Steam Only Commercial Packaged Boilers	2 Basic Models.
Oil-fired Hot Water/Steam Commercial Packaged Boilers	2 Basic Models.
(D) Commercial furnace validation classes	
Gas-fired Furnaces	2 Basic Models.
Oil-fired Furnaces	2 Basic Models.
(E) Commercial refrigeration equipment validation classes	
Self-Contained Open Refrigerators	2 Basic Models.
Self-Contained Open Freezers	2 Basic Models.
Remote Condensing Open Refrigerators	2 Basic Models.
Remote Condensing Open Freezers	2 Basic Models.
Self-Contained Closed Refrigerators	2 Basic Models.
Self-Contained Closed Freezers	2 Basic Models.
Remote Condensing Closed Refrigerators	2 Basic Models.
Remote Condensing Closed Freezers	2 Basic Models.

[1] The minimum number of tests indicated above must be comprised of a transparent model, a solid model, a vertical model, a semi-vertical model, a horizontal model, and a service-over-the counter model, as applicable based on the equipment offering. However, manufacturers do not need to include all types of these models if it will increase the minimum number of tests that need to be conducted.

(3) *AEDM records retention requirements.* If a manufacturer has used an AEDM to determine representative values pursuant to this section, the manufacturer must have available upon request for inspection by the Department records showing:

(i) The AEDM, including the mathematical model, the engineering or statistical analysis, and/or computer simulation or modeling that is the basis of the AEDM;

(ii) Product information, complete test data, AEDM calculations, and the statistical comparisons from the units tested that were used to validate the AEDM pursuant to paragraph (c)(2) of this section; and

(iii) Product information and AEDM calculations for each basic model to which the AEDM has been applied.

(4) *Additional AEDM requirements.* If requested by the Department and at DOE's discretion, the manufacturer must perform at least one of the following:

(i) Conduct simulations before representatives of the Department to predict the performance of particular basic models of the product to which the AEDM was applied;

(ii) Provide analyses of previous simulations conducted by the manufacturer; or

(iii) Conduct certification testing of basic models selected by the Department.

(5) *AEDM verification testing.* DOE may use the test data for a given individual model generated pursuant to § 429.104 to verify the certified rating determined by an AEDM as long as the following process is followed:

(i) *Selection of units.* DOE will obtain units for test from retail, where available. If units cannot be obtained from retail, DOE will request that a unit be provided by the manufacturer;

(ii) *Lab requirements.* DOE will conduct testing at an independent, third-party testing facility of its choosing. In cases where no third-party laboratory is capable of testing the equipment, it may be tested at a manufacturer's facility upon DOE's request.

(iii) *Manufacturer participation.* [Reserved]

(iv) *Testing.* At no time during verification testing may the lab and the manufacturer communicate without DOE authorization. All verification testing will be conducted in accordance with the applicable DOE test procedure, as well as each of the following to the extent that they apply:

(A) Any active test procedure waivers that have been granted for the basic model;

(B) Any test procedure guidance that has been issued by DOE;

(C) The installation and operations manual that is shipped with the unit;

(D) Any additional information that was provided by the manufacturer at the time of certification (prior to DOE obtaining the unit for test); and

(E) If during test set-up or testing, the lab indicates to DOE that it needs additional information regarding a given basic model in order to test in accordance with the applicable DOE test procedure, DOE may organize a meeting between DOE, the manufacturer and the lab to provide such information.

(v) *Failure to meet certified rating.* If a model tests worse than its certified rating by an amount exceeding the tolerance prescribed in paragraph (c)(5)(vi) of this section, DOE will notify the manufacturer. DOE will provide the manufacturer with all documentation related to the test set up, test condi-

tions, and test results for the unit. Within the timeframe allotted by DOE, the manufacturer may then:

(A) Present all claims regarding testing validity; and

(B) If the manufacturer was not on site for the initial test set-up, request a retest of the previously tested unit with manufacturer and DOE representatives on-site for the test set-up. DOE will not conduct the retest using a different unit of the same basic model unless DOE and the manufacturer determine it is necessary based on the test results, claims presented, and DOE regulations.

(vi) *Tolerances.* (A) For consumption metrics, the result from a DOE verification test must be less than or equal to the certified rating $\times$ (1 + the applicable tolerance).

(B) For efficiency metrics, the result from a DOE verification test must be greater than or equal to the certified rating $\times$ (1 − the applicable tolerance).

Equipment	Metric	Applicable tolerance
Commercial Packaged Boilers	Combustion Efficiency	5% (0.05)
	Thermal Efficiency	5% (0.05)
Commercial Water Heaters or Hot Water Supply Boilers	Thermal Efficiency	5% (0.05)
	Standby Loss	10% (0.1)
Unfired Storage Tanks	R-Value	10% (0.1)
Air-Cooled, Split and Packaged ACs and HPs less than 65,000 Btu/h	Seasonal Energy-Efficiency Ratio	5% (0.05)
Cooling Capacity (3-Phase)	Heating Season Performance Factor	5% (0.05)
	Energy Efficiency Ratio	10% (0.1)
Air-Cooled, Split and Packaged ACs and HPs greater than or equal to 65,000 Btu/h Cooling Capacity and Less than 760,000 Btu/h Cooling Capacity.	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
	Integrated Energy Efficiency Ratio	10% (0.1)
Water-Cooled, Split and Packaged ACs and HPs, All Cooling Capacities	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
	Integrated Energy Efficiency Ratio	10% (0.1)
Evaporatively-Cooled, Split and Packaged ACs and HPs, All Capacities	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
	Integrated Energy Efficiency Ratio	10% (0.1)
Water-Source HPs, All Capacities	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
	Integrated Energy Efficiency Ratio	10% (0.1)
Single Package Vertical ACs and HPs	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
Packaged Terminal ACs and HPs	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
Variable Refrigerant Flow ACs and HPs	Energy Efficiency Ratio	5% (0.05)
	Coefficient of Performance	5% (0.05)
	Integrated Energy Efficiency Ratio	10% (0.1)
Computer Room Air Conditioners	Sensible Coefficient of Performance	5% (0.05)
Commercial Warm-Air Furnaces	Thermal Efficiency	5% (0.05)
Commercial Refrigeration Equipment	Daily Energy Consumption	5% (0.05)

(vii) *Invalid rating.* If, following discussions with the manufacturer and a retest where applicable, DOE determines that the verification testing was conducted appropriately in accordance with the DOE test procedure, DOE will issue a determination that the rating for the model is invalid. The manufacturer must elect, within 15 days, one of the following to be completed in a time frame specified by DOE, which is never to exceed 180 days:

(A) Re-rate and re-certify the model based on DOE's test data alone; or

(B) Discontinue the model through the certification process; or

(C) Conduct additional testing and re-rate and re-certify the basic model based on all test data collected, including DOE's test data.

(viii) *AEDM use.* (A) If DOE has determined that a manufacturer made invalid ratings on two or more models rated using the same

AEDM within a 24 month period, the manufacturer must take the action listed in the table corresponding to the number of invalid certified ratings. The twenty-four month period begins with a DOE determination that a rating is invalid through the process outlined above. Additional invalid ratings apply for the purposes of determining the appropriate consequences if the subsequent determination(s) is based on selection of a unit for testing within the twenty-four month period (i.e., subsequent determinations need not be made within 24 months).

Number of invalid certified ratings from the same AEDM[2] within a rolling 24 month period[3]	Required manufacturer actions
2	Submit different test data and reports from testing to validate that AEDM within the validation classes to which it is applied.[1] Adjust the ratings as appropriate.
4	Conduct double the minimum number of validation tests for the validation classes to which the AEDM is applied. Note, the tests required under this paragraph (c)(5)(viii) must be performed on different models than the original tests required under paragraph (c)(2) of this section.
6	Conduct the minimum number of validation tests for the validation classes to which the AEDM is applied at a third-part test facility; And
	Conduct addition testing, which is equal to ½ the minimum number of validation tests for the validation classes to which the AEDM is applied, at either the manufacturer's facility or a third-party test facility, at the manufacturer's discretion.
	Note, the tests required under this paragraph (c)(5)(viii) must be performed on different models than the original tests performed under paragraph (c)(2) of this section.
> = 8	Manufacturer has lost privilege to use AEDM. All ratings for models within the validation classes to which the AEDM applied should be rated via testing. Distribution cannot continue until certification(s) are corrected to reflect actual test data.

[1] A manufacturer may discuss with DOE's Office of Enforcement whether existing test data on different basic models within the validation classes to which that specific AEDM was applied may be used to meet this requirement.
[2] The "same AEDM" means a computer simulation or mathematical model that is identified by the manufacturer at the time of certification as having been used to rate a model or group of models.
[3] The twenty-four month period begins with a DOE determination that a rating is invalid through the process outlined above. Additional invalid ratings apply for the purposes of determining the appropriate consequences if the subsequent determination(s) is based on testing of a unit that was selected for testing within the twenty-four month period (i.e., subsequent determinations need not be made within 24 months).

(B) If, as a result of eight or more invalid ratings, a manufacturer has lost the privilege of using an AEDM for rating, the manufacturer may regain the ability to use an AEDM by:

(1) Investigating and identifying cause(s) for failures;

(2) Taking corrective action to address cause(s);

(3) Performing six new tests per validation class, a minimum of two of which must be performed by an independent, third-party laboratory to validate the AEDM; and

(4) Obtaining DOE authorization to resume use of the AEDM.

* * * * *

§ 429.71 Maintenance of records.

(a) The manufacturer of any covered product or covered equipment shall establish, maintain, and retain the records of certification reports, of the underlying test data for all certification testing, and of any other testing conducted to satisfy the requirements of this part, part 430, and part 431. Any manufacturer who chooses to use an alternative method for determining energy efficiency or energy use in accordance with § 429.70 must retain the records required by that section, any other records of any testing performed to support the use of the alternative method, and any certifications required by that section, on file for review by DOE for two years following the discontinuance of all models or combinations whose ratings were based on the alternative method.

(b) Such records shall be organized and indexed in a fashion that makes them readily accessible for review by DOE upon request.

(c) The records shall be retained by the manufacturer for a period of two years from the date that the manufacturer or third party submitter has notified DOE that the model has been discontinued in commerce.

APPENDIX A TO SUBPART B OF PART 429—STUDENT'S T-DISTRIBUTION VALUES FOR CERTIFICATION TESTING

FIGURE 1—T-DISTRIBUTION VALUES FOR CERTIFICATION TESTING
[One-Sided]

Degrees of freedom (from Appendix A)	Confidence Interval			
	90%	95%	97.5%	99%
1	3.078	6.314	12.71	31.82
2	1.886	2.920	4.303	6.965
3	1.638	2.353	3.182	4.541
4	1.533	2.132	2.776	3.747
5	1.476	2.015	2.571	3.365
6	1.440	1.943	2.447	3.143
7	1.415	1.895	2.365	2.998
8	1.397	1.860	2.306	2.896
9	1.383	1.833	2.262	2.821
10	1.372	1.812	2.228	2.764
11	1.363	1.796	2.201	2.718
12	1.356	1.782	2.179	2.681
13	1.350	1.771	2.160	2.650
14	1.345	1.761	2.145	2.624
15	1.341	1.753	2.131	2.602
16	1.337	1.746	2.120	2.583
17	1.333	1.740	2.110	2.567
18	1.330	1.734	2.101	2.552
19	1.328	1.729	2.093	2.539
20	1.325	1.725	2.086	2.528

[76 FR 12451, Mar. 7, 2011; 76 FR 24780, May 2, 2011]

Subpart C—Enforcement

§ 429.100 Purpose and scope.

This subpart describes the enforcement authority of DOE to ensure compliance with the conservation standards and regulations.

§ 429.102 Prohibited acts subjecting persons to enforcement action.

(a) Each of the following actions is prohibited:

(1) Failure of a manufacturer to provide, maintain, permit access to, or copying of records required to be supplied under the Act and this part or failure to make reports or provide other information required to be supplied under the Act and this part, including but not limited to failure to properly certify covered products and covered equipment in accordance with § 429.12 and §§ 429.14 through 429.54;

(2) Failure to test any covered product or covered equipment subject to an applicable energy conservation standard in conformance with the applicable test requirements prescribed in 10 CFR parts 430 or 431;

(3) Deliberate use of controls or features in a covered product or covered equipment to circumvent the requirements of a test procedure and produce test results that are unrepresentative of a product's energy or water consumption if measured pursuant to DOE's required test procedure;

(4) Failure of a manufacturer to supply at the manufacturer's expense a requested number of covered products or covered equipment to a designated test laboratory in accordance with a test notice issued by DOE;

(5) Failure of a manufacturer to permit a DOE representative to observe any testing required by the Act and this part and inspect the results of such testing;

(6) Distribution in commerce by a manufacturer or private labeler of any new covered product or covered equipment that is not in compliance with an applicable energy conservation standard prescribed under the Act;

(7) Distribution in commerce by a manufacturer or private labeler of a basic model of covered product or covered equipment after a notice of noncompliance determination has been issued to the manufacturer or private labeler;

(8) Knowing misrepresentation by a manufacturer or private labeler by certifying an energy use or efficiency rating of any covered product or covered equipment distributed in commerce in a manner that is not supported by test data;

(9) For any manufacturer, distributor, retailer, or private labeler to distribute in commerce an adapter that—

(i) Is designed to allow an incandescent lamp that does not have a medium screw base to be installed into a fixture or lamp holder with a medium screw base socket; and

(ii) Is capable of being operated at a voltage range at least partially within 110 and 130 volts; or

(10) For any manufacturer or private labeler to knowingly sell a product to a distributor, contractor, or dealer with knowledge that the entity routinely violates any regional standard applicable to the product.

(b) When DOE has reason to believe that a manufacturer or private labeler has undertaken a prohibited act listed in paragraph (a) of this section, DOE may:

(1) Issue a notice of noncompliance determination;

(2) Impose additional certification testing requirements;

(3) Seek injunctive relief;

(4) Assess a civil penalty for knowing violations; or

(5) Undertake any combination of the above.

§ 429.104 Assessment testing.

DOE may, at any time, test a basic model to assess whether the basic model is in compliance with the applicable energy conservation standard(s).

§ 429.106 Investigation of compliance.

(a) DOE may initiate an investigation that a basic model may not be compliant with an applicable conservation standard, certification requirement or other regulation at any time.

(b) DOE may, at any time, request any information relevant to determining compliance with any requirement under parts 429, 430 and 431, including the data underlying certification of a basic model. Such data may be used by DOE to make a determination of compliance or noncompliance with an applicable standard.

§ 429.110 Enforcement testing.

(a) *General provisions.* (1) If DOE has reason to believe that a basic model is not in compliance it may test for enforcement.

(2) DOE will select and test units pursuant to paragraphs (c) and (e) of this section.

(3) Testing will be conducted at a lab accredited to the International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC), "General requirements for the competence of testing and calibration laboratories," ISO/IEC 17025:2005(E) (incorporated by reference; *see* § 429.4). If testing cannot be completed at an independent lab, DOE, at its discretion, may allow enforcement testing at a manufacturer's lab, so long as the lab is accredited to ISO/IEC 17025:2005(E)

and DOE representatives witness the testing.

(b) *Test notice.* (1) To obtain units for enforcement testing to determine compliance with an applicable standard, DOE will issue a test notice addressed to the manufacturer in accordance with the following requirements:

(i) DOE will send the test notice to the manufacturer's certifying official or other company official.

(ii) The test notice will specify the basic model that will be selected for testing, the method of selecting the test sample, the maximum size of the sample and the size of the initial test sample, the dates at which testing is scheduled to be started and completed, and the facility at which testing will be conducted. The test notice may also provide for situations in which the selected basic model is unavailable for testing and may include alternative models or basic models.

(iii) DOE will state in the test notice that it will select the units of a basic model to be tested from the manufacturer, from one or more distributors, and/or from one or more retailers. If any unit is selected from a distributor or retailer, the manufacturer shall make arrangements with the distributor or retailer for compensation for or replacement of any such units.

(iv) DOE may require in the test notice that the manufacturer of a basic model ship or cause to be shipped from a retailer or distributor at its expense the requested number of units of a basic model specified in such test notice to the testing laboratory specified in the test notice. The manufacturer shall ship the specified initial test unit(s) of the basic model to the testing laboratory within 5 working days from the time units are selected.

(v) If DOE determines that the units identified are low-volume or built-to-order products, DOE will contact the manufacturer to develop a plan for enforcement testing in lieu of paragraphs (ii)–(iv) of this section.

(2) [Reserved]

(c) *Test unit selection.* (1) To select units for testing from a:

(i) Manufacturer's warehouse, distributor, or other facility affiliated with the manufacturer. DOE will select

a batch sample at random in accordance with the provisions in paragraph (e) of this section and the conditions specified in the test notice. DOE will randomly select an initial test sample of units from the batch sample for testing in accordance with appendices A through C of this subpart. DOE will make a determination whether an alternative sample size will be used in accordance with the provisions in paragraph (e)(1)(iv) of this section.

(ii) *Retailer or other facility not affiliated with the manufacturer.* DOE will select an initial test sample of units at random that satisfies the minimum units necessary for testing in accordance with the provisions in appendices A through C of this subpart and the conditions specified in the test notice. Depending on the results of the testing, DOE may select additional units for testing from a retailer in accordance with appendices A through C of this subpart. If the full sample is not available from a retailer, DOE will make a determination whether an alternative sample size will be used in accordance with the provisions in paragraph (e)(1)(iv) of this section.

(2) Units tested in accordance with the applicable test procedure under this part by DOE or another Federal agency, pursuant to other provisions or programs, may count toward units in the test sample.

(3) The resulting test data shall constitute official test data for the basic model. Such test data will be used by DOE to make a determination of compliance or noncompliance if a sufficient number of tests have been conducted to satisfy the requirements of paragraph (e) of this section and appendices A through C of this subpart.

(d) *Test unit preparation.* (1) Prior to and during testing, a test unit selected for enforcement testing shall not be prepared, modified, or adjusted in any manner unless such preparation, modification, or adjustment is allowed by the applicable DOE test procedure. One test shall be conducted for each test unit in accordance with the applicable test procedures prescribed in parts 430 and 431.

(2) No quality control, testing or assembly procedures shall be performed on a test unit, or any parts and sub-

assemblies thereof, that is not performed during the production and assembly of all other units included in the basic model.

(3) A test unit shall be considered defective if such unit is inoperative or is found to be in noncompliance due to failure of the unit to operate according to the manufacturer's design and operating instructions. Defective units, including those damaged due to shipping or handling, shall be reported immediately to DOE. DOE may authorize testing of an additional unit on a case-by-case basis.

(e) *Basic model compliance.* (1) DOE will evaluate whether a basic model complies with the applicable energy conservation standard(s) based on testing conducted in accordance with the applicable test procedures specified in parts 430 and 431, and with the following statistical sampling procedures:

(i) For products with applicable energy conservation standard(s) in §430.32, and commercial pre-rinse spray valves, illuminated exit signs, traffic signal modules and pedestrian modules, commercial clothes washers, and metal halide lamp ballasts, DOE will use a sample size of not more than 21 units and follow the sampling plans in appendix A of this subpart (Sampling for Enforcement Testing of Covered Consumer Products and Certain High-Volume Commercial Equipment).

(ii) For automatic commercial ice makers; commercial refrigerators, freezers, and refrigerator-freezers; refrigerated bottled or canned vending machines; and commercial HVAC and WH equipment, DOE will use an initial sample size of not more than four units and follow the sampling plans in appendix B of this subpart (Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products). If fewer than four units of a basic model are available for testing when the manufacturer receives the notice, then:

(A) DOE will test the available unit(s); or

(B) If one or more other units of the basic model are expected to become available within 30 calendar days, DOE may instead, at its discretion, test either:

(*1*) The available unit(s) and one or more of the other units that subsequently become available (up to a maximum of four); or

(*2*) Up to four of the other units that subsequently become available.

(iii) For distribution transformers, DOE will use an initial sample size of not more than five units and follow the sampling plans in appendix C of this subpart (Sampling Plan for Enforcement Testing of Distribution Transformers). If fewer than five units of a basic model are available for testing when the manufacturer receives the test notice, then:

(A) DOE will test the available unit(s); or

(B) If one or more other units of the basic model are expected to become available within 30 calendar days, the Department may instead, at its discretion, test either:

(*1*) The available unit(s) and one or more of the other units that subsequently become available (up to a maximum of five); or

(*2*) Up to five of the other units that subsequently become available.

(iv) Notwithstanding paragraphs (e)(1)(i) through (e)(1)(iii) of this section, if testing of the available or subsequently available units of a basic model would be impractical, as for example when a basic model has unusual testing requirements or has limited production, DOE may in its discretion decide to base the determination of compliance on the testing of fewer than the otherwise required number of units.

(v) When DOE makes a determination in accordance with section (e)(1)(iv) to test less than the number of units specified in parts (d)(1)(i) through (d)(1)(iii) of this section, DOE will base the compliance determination on the results of such testing in accordance with appendix B of this subpart (Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products) using a sample size (n_1) equal to the number of units tested.

(vi) For the purposes of paragraphs (e)(1)(i) through (e)(1)(v) of this section, available units are those that are available for distribution in commerce within the United States.

§ 429.114 Notice of noncompliance and notice to cease distribution of a basic model.

(a) In the event that DOE determines a basic model is noncompliant with an applicable energy conservation standard, or if a manufacturer or private labeler determines a basic model to be in noncompliance, DOE may issue a notice of noncompliance determination to the manufacturer or private labeler. This notice of noncompliance determination will notify the manufacturer or private labeler of its obligation to:

(1) Immediately cease distribution in commerce of the basic model;

(2) Give immediate written notification of the determination of noncompliance to all persons to whom the manufacturer has distributed units of the basic model manufactured since the date of the last determination of compliance; and

(3) Provide DOE, within 30 calendar days of the request, records, reports and other documentation pertaining to the acquisition, ordering, storage, shipment, or sale of a basic model determined to be in noncompliance.

(b) In the event that DOE determines a manufacturer has failed to comply with an applicable certification requirement with respect to a particular basic model, DOE may issue a notice of noncompliance determination to the manufacturer or private labeler. This notice of noncompliance determination will notify the manufacturer or private labeler of its obligation to:

(1) Immediately cease distribution in commerce of the basic model;

(2) Immediately comply with the applicable certification requirement; and/or

(3) Provide DOE within 30 days of the request, records, reports and other documentation pertaining to the acquisition, ordering, storage, shipment, or sale of the basic model.

(c) If a manufacturer or private labeler fails to comply with the required actions in the notice of noncompliance determination as set forth in paragraphs (a) or (b) of this section, the General Counsel (or delegee) may seek, among other remedies, injunctive action and civil penalties, where appropriate.

(d) The manufacturer may modify a basic model determined to be noncompliant with an applicable energy conservation standard in such manner as to make it comply with the applicable standard. Such modified basic model shall then be treated as a new basic model and must be certified in accordance with the provisions of this part; except that in addition to satisfying all requirements of this part, any models within the basic model must be assigned new model numbers and the manufacturer shall also maintain, and provide upon request to DOE, records that demonstrate that modifications have been made to all units of the new basic model prior to distribution in commerce.

§ 429.116 Additional certification testing requirements.

Pursuant to § 429.102(b)(2), if DOE determines that independent, third-party testing is necessary to ensure a manufacturer's compliance with the rules of this part, part 430, or part 431, a manufacturer must base its certification of a basic model under subpart B of this part on independent, third-party laboratory testing.

§ 429.118 Injunctions.

If DOE has reason to seek an injunction under the Act:

(a) DOE will notify the manufacturer, private labeler or any other person as required, of the prohibited act at issue and DOE's intent to seek a judicial order enjoining the prohibited act unless the manufacturer, private labeler or other person, delivers to DOE within 15 calendar days a corrective action and compliance plan, satisfactory to DOE, of the steps it will take to ensure that the prohibited act ceases. DOE will monitor the implementation of such plan.

(b) If the manufacturer, private labeler or any other person as required, fails to cease engaging in the prohibited act or fails to provide a satisfactory corrective action and compliance plan, DOE may seek an injunction.

§ 429.120 Maximum civil penalty.

Any person who knowingly violates any provision of § 429.102(a) of this part may be subject to assessment of a civil penalty of no more than $200 for each violation. As to § 429.102(a)(1) with respect to failure to certify, and as to § 429.102(a)(2), (5) through (9), each unit of a covered product or covered equipment distributed in violation of such paragraph shall constitute a separate violation. For violations of § 429.102(a)(1), (3), and (4), each day of noncompliance shall constitute a separate violation for each basic model at issue.

§ 429.122 Notice of proposed civil penalty.

(a) The General Counsel (or delegee) shall provide notice of any proposed civil penalty.

(b) The notice of proposed penalty shall:

(1) Include the amount of the proposed penalty;

(2) Include a statement of the material facts constituting the alleged violation; and

(3) Inform the person of the opportunity to elect in writing within 30 calendar days of receipt of the notice to have the procedures of § 429.128 (in lieu of those of § 429.126) apply with respect to the penalty.

§ 429.124 Election of procedures.

(a) In responding to a notice of proposed civil penalty, the respondent may request:

(1) An administrative hearing before an Administrative Law Judge (ALJ) under § 429.126 of this part; or

(2) Elect to have the procedures of § 429.128 apply.

(b) Any election to have the procedures of § 429.128 apply may not be revoked except with the consent of the General Counsel (or delegee).

(c) If the respondent fails to respond to a notice issued under § 429.120 or otherwise fails to indicate its election of procedures, DOE shall refer the civil penalty action to an ALJ for a hearing under § 429.126.

§ 429.126 Administrative law judge hearing and appeal.

(a) When elected pursuant to § 429.124, DOE shall refer a civil penalty action brought under § 429.122 of this part to

an ALJ, who shall afford the respondent an opportunity for an agency hearing on the record.

(b) After consideration of all matters of record in the proceeding, the ALJ will issue a recommended decision, if appropriate, recommending a civil penalty. The decision will include a statement of the findings and conclusions, and the reasons therefore, on all material issues of fact, law, and discretion.

(c)(1) The General Counsel (or delegee) shall adopt, modify, or set aside the conclusions of law or discretion contained in the ALJ's recommended decision and shall set forth a final order assessing a civil penalty. The General Counsel (or delegee) shall include in the final order the ALJ's findings of fact and the reasons for the final agency actions.

(2) Any person against whom a penalty is assessed under this section may, within 60 calendar days after the date of the final order assessing such penalty, institute an action in the United States Court of Appeals for the appropriate judicial circuit for judicial review of such order in accordance with chapter 7 of title 5, United States Code. The court shall have jurisdiction to enter a judgment affirming, modifying, or setting aside in whole or in part, the final order, or the court may remand the proceeding to the Department for such further action as the court may direct.

§ 429.128　Immediate issuance of order assessing civil penalty.

(a) If the respondent elects to forgo an agency hearing pursuant to § 429.124, the General Counsel (or delegee) shall issue an order assessing the civil penalty proposed in the notice of proposed penalty under § 429.122, 30 calendar days after the respondent's receipt of the notice of proposed penalty.

(b) If within 60 calendar days of receiving the assessment order in paragraph (a) of this section the respondent does not pay the civil penalty amount, DOE shall institute an action in the appropriate United States District Court for an order affirming the assessment of the civil penalty. The court shall have authority to review de novo the law and the facts involved and shall have jurisdiction to enter a judg-

ment enforcing, modifying, and enforcing as so modified, or setting aside in whole or in part, such assessment.

§ 429.130　Collection of civil penalties.

If any person fails to pay an assessment of a civil penalty after it has become a final and unappealable order under § 429.126 or after the appropriate District Court has entered final judgment in favor of the Department under § 429.128, the General Counsel (or delegee) shall institute an action to recover the amount of such penalty in any appropriate District Court of the United States. In such action, the validity and appropriateness of such final assessment order or judgment shall not be subject to review.

§ 429.132　Compromise and settlement.

(a) DOE may compromise, modify, or remit, with or without conditions, any civil penalty (with leave of court if necessary).

(b) In exercising its authority under paragraph (a) of this section, DOE may consider the nature and seriousness of the violation, the efforts of the respondent to remedy the violation in a timely manner, and other factors as justice may require.

(c) DOE's authority to compromise, modify or remit a civil penalty may be exercised at any time prior to a final decision by the United States Court of Appeals if § 429.126 procedures are utilized, or prior to a final decision by the United States District Court, if § 429.128 procedures are utilized.

(d) Notwithstanding paragraph (a) of this section, DOE or the respondent may propose to settle the case. If a settlement is agreed to by the parties, the respondent is notified and the case is closed in accordance with the terms of the settlement.

Appendix A to Subpart C of Part 429—Sampling Plan for Enforcement Testing of Covered Consumer Products and Certain High-Volume Commercial Equipment

(a) The first sample size (n_1) for enforcement testing must be four or more units, except as provided by § 429.57(e)(1)(i).

(b) Compute the mean of the measured energy performance (x_1) for all tests as follows:

$$x_1 = \frac{1}{n_1}\left(\sum_{i=1}^{n_1} x_i\right)$$
[1]

where x_i is the measured energy or water ef-
ficiency or consumption from test i, and
n_1 is the total number of tests.

(c) Compute the standard deviation (s_1) of
the measured energy performance from the
n_1 tests as follows:

$$s_1 = \sqrt{\frac{\sum_{i=1}^{n_1}(x_i - x_1)^2}{n_1 - 1}}$$
[2]

(d) Compute the standard error (s_{x1}) of the
measured energy performance from the n_1
tests as follows:

$$s_{x_1} = \frac{s_1}{\sqrt{n_1}}$$
[3]

(e)(1) Compute the upper control limit
(UCL$_1$) and lower control limit (LCL$_1$) for the
mean of the first sample using the applicable
DOE energy efficiency standard (EES) as the

desired mean and a probability level of 95
percent (two-tailed test) as follows:

LCL$_1$ EES — ts_{x1} x

$$LCL_1 = EES - ts_{x_1}$$
[4] and $$UCL_1 = EES + ts_{x_1}$$
[5]

where t is the statistic based on a 95 percent
two-tailed probability level with degrees
of freedom ($n_1 - 1$).

(2) For an energy efficiency or water effi-
ciency standard, compare the mean of the
first sample (x_1) with the upper and lower
control limits (UCL$_1$ and LCL$_1$) to determine
one of the following:

(i) If the mean of the first sample is below
the lower control limit, then the basic model
is in noncompliance and testing is at an end.
(Do not go on to any of the steps below.)

(ii) If the mean of the first sample is equal
to or greater than the upper control limit,

then the basic model is in compliance and
testing is at an end. (Do not go on to any of
the steps below.)

(iii) If the sample mean is equal to or
greater than the lower control limit but less
than the upper control limit, then no deter-
mination of compliance or noncompliance
can be made and a second sample size is de-
termined by Step (e)(3).

(3) For an energy efficiency or water effi-
ciency standard, determine the second sam-
ple size (n_2) as follows:

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$$n_2 = \left(\frac{ts_1}{0.05EES}\right)^2 - n_1 \qquad [6]$$

where s_1 and t have the values used in equations 2 and 4, respectively. The term "0.05 EES" is the difference between the applicable energy efficiency or water efficiency standard and 95 percent of the standard, where 95 percent of the standard is taken as the lower control limit. This procedure yields a sufficient combined sample size (n_1+n_2) to give an estimated 97.5 percent probability of obtaining a determination of compliance when the true mean efficiency is equal to the applicable standard. Given the solution value of n_2, determine one of the following:

(i) If the value of n_2 is less than or equal to zero and if the mean energy or water efficiency of the first sample (x_1) is either equal to or greater than the lower control limit (LCL_1) or equal to or greater than 95 percent of the applicable energy efficiency or water efficiency standard (EES), whichever is greater, *i.e.*, if $n_2 \leq 0$ and $x_1 \geq$ max $(LCL_1, 0.95$ EES), the basic model is in compliance and testing is at an end.

(ii) If the value of n_2 is less than or equal to zero and the mean energy efficiency of the first sample (x_1) is less than the lower control limit (LCL_1) or less than 95 percent of the applicable energy or water efficiency standard (EES), whichever is greater, *i.e.*, if $n_2 \leq 0$ and $x_1 \leq$ max $(LCL_1, 0.95$ EES), the basic model is not in compliance and testing is at an end.

(iii) If the value of n_2 is greater than zero, then, the value of the second sample size is determined to be the smallest integer equal to or greater than the solution value of n_2 for equation (6). If the value of n_2 so calculated is greater than $21 - n_1$, set n_2 equal to $21 - n_1$.

(4) Compute the combined mean (x_2) of the measured energy or water efficiency of the n_1 and n_2 units of the combined first and second samples as follows:

$$\overline{x}_2 = \frac{1}{n_1 + n_2}\left(\sum_{i=1}^{n_1+n_2} x_i\right) \qquad [7]$$

(5) Compute the standard error (S_{x2}) of the measured energy or water performance of the n_1 and n_2 units in the combined first and second samples as follows:

$$S_{x_2} = \frac{s_1}{\sqrt{n_1 + n_2}} \qquad [8]$$

NOTE: s_1 is the value obtained in Step (c).

(6) For an energy efficiency standard (EES), compute the lower control limit (LCL_2) for the mean of the combined first and second samples using the DOE EES as the desired mean and a one-tailed probability level of 97.5 percent (equivalent to the two-tailed probability level of 95 percent used in Step (e)(1)) as follows:

$$LCL_2 = EES - ts_{x_2} \qquad [9]$$

where the t-statistic has the value obtained in Step (e)(1) and s_{x2} is the value obtained in Step (e)(5).

(7) For an energy efficiency standard (EES), compare the combined sample mean (x_2) to the lower control limit (LCL_2) to determine one of the following:

(i) If the mean of the combined sample (x_2) is less than the lower control limit (LCL$_2$) or 95 percent of the applicable energy efficiency standard (EES), whichever is greater, *i.e.*, if $x_2 <$ max (LCL$_2$, 0.95 EES), the basic model is not compliant and testing is at an end.

(iii) If the mean of the combined sample (x_2) is equal to or greater than the lower control limit (LCL$_2$) or 95 percent of the applicable energy efficiency standard (EES), which-ever is greater, *i.e.*, if $x_2 \geq$ max (LCL$_2$, 0.95 EES), the basic model is in compliance and testing is at an end.

(f)(1) Compute the upper control limit (UCL$_1$) and lower control limit (LCL$_1$) for the mean of the first sample using the applicable DOE energy consumption standard (ECS) as the desired mean and a probability level of 95 percent (two-tailed test) as follows:

$$ LCL_1 = ECS - ts_{x_1} \qquad \text{and} \quad UCL_1 = ECS + ts_{x_1} \qquad [10] $$

where t is the statistic based on a 95 percent two-tailed probability level with degrees of freedom ($n_1 - 1$).

(2) For an energy or water consumption standard, compare the mean of the first sam-ple (x_1) with the upper and lower control lim-its (UCL$_1$ and LCL$_1$) to determine one of the following:

(i) If the mean of the first sample is above the upper control limit, then the basic model is in noncompliance and testing is at an end. (Do not go on to any of the steps below.)

(ii) If the mean of the first sample is equal to or less than the lower control limit, then the basic model is in compliance and testing is at an end. (Do not go on to any of the steps below.)

(iii) If the sample mean is equal to or less than the upper control limit but greater than the lower control limit, then no deter-mination of compliance or noncompliance can be made and a second sample size is de-termined by Step (f)(3).

(3) For an Energy or Water Consumption Standard, determine the second sample size (n_2) as follows:

$$ n_2 = \left(\frac{ts_1}{0.05ECS} \right)^2 - n_1 \qquad [11] $$

where s_1 and t have the values used in equa-tions (2) and (10), respectively. The term ''0.05 ECS'' is the difference between the ap-plicable energy or water consumption stand-ard and 105 percent of the standard, where 105 percent of the standard is taken as the upper control limit. This procedure yields a sufficient combined sample size ($n_1 + n_2$) to give an estimated 97.5 percent probability of obtaining a determination of compliance when the true mean consumption is equal to the applicable standard. Given the solution value of n_2, determine one of the following:

(i) If the value of n_2 is less than or equal to zero and if the mean energy or water con-sumption of the first sample (x_1) is either equal to or less than the upper control limit (UCL$_1$) or equal to or less than 105 percent of the applicable energy or water consumption standard (ECS), whichever is less, *i.e.*, if $n_2 \leq 0$ and $x_1 \leq$ min (UCL$_1$, 1.05 ECS), the basic model is in compliance and testing is at an end.

(ii) If the value of n_2 is less than or equal to zero and the mean energy or water con-sumption of the first sample (x_1) is greater than the upper control limit (UCL$_1$) or more than 105 percent of the applicable energy or water consumption standard (ECS), which-ever is less, *i.e.*, if $n_2 \leq 0$ and $x_1 >$ min (UCL$_1$, 1.05 EPS), the basic model is not compliant and testing is at an end.

(iii) If the value of n_2 is greater than zero, then the value of the second sample size is determined to be the smallest integer equal to or greater than the solution value of n_2 for equation (11). If the value of n_2 so calculated is greater than $21 - n_1$, set n_2 equal to $21 - n_1$.

(4) Compute the combined mean (x_2) of the measured energy or water consumption of the n_1 and n_2 units of the combined first and second samples as follows:

$$\overline{x}_2 = \frac{1}{n_1 + n_2}\left(\sum_{i=1}^{n_1 + n_2} x_i\right) \qquad [12]$$

(5) Compute the standard error (S_{x2}) of the measured energy or water consumption of the n_1 and n_2 units in the combined first and second samples as follows:

$$s_{x_2} = \frac{s_1}{\sqrt{n_1 + n_2}} \qquad [13]$$

NOTE: s_1 is the value obtained in Step (c).

(6) For an energy or water consumption standard (ECS), compute the upper control limit (UCL_2) for the mean of the combined first and second samples using the DOE ECS as the desired mean and a one-tailed probability level of 97.5 percent (equivalent to the two-tailed probability level of 95 percent used in Step (f)(1)) as follows:

$$UCL_1 = ECS + ts_{x_1} \qquad [14]$$

where the t-statistic has the value obtained in (f)(1).

(7) For an energy or water consumption standard (ECS), compare the combined sample mean (x_2) to the upper control limit (UCL_2) to determine one of the following:

(i) If the mean of the combined sample (x_2) is greater than the upper control limit (UCL_2) or 105 percent of the ECS whichever is less, *i.e.,* if x_2 >min (UCL_2, 1.05 ECS), the basic model is not compliant and testing is at an end.

(ii) If the mean of the combined sample (x_2) is equal to or less than the upper control limit (UCL_2) or 105 percent of the applicable energy or water performance standard (ECS), whichever is less, *i.e.,* if x $_2$≤min (UCL_2, 1.05 ECS), the basic model is in compliance and testing is at an end.

APPENDIX B TO SUBPART C OF PART 429—SAMPLING PLAN FOR ENFORCE-MENT TESTING OF COVERED EQUIP-MENT AND CERTAIN LOW-VOLUME COVERED PRODUCTS

The Department will determine compliance as follows:

(a) The first sample size (n_1) must be four or more units, except as provided by §429.57(e)(1)(ii).

(b) Compute the mean of the measured energy performance (x_1) for all tests as follows:

$$x_1 = \frac{1}{n_1}\left(\sum_{i=1}^{n_1} x_i\right) \qquad [1]$$

where x_i is the measured energy efficiency or consumption from test i, and n_1 is the total number of tests.

(c) Compute the standard deviation (s_1) of the measured energy performance from the n_1 tests as follows:

$$s_1 = \sqrt{\frac{\sum\limits_{i=1}^{n_1}(x_i - x_1)^2}{n_1 - 1}} \qquad [2]$$

(d) Compute the standard error (s_{x1}) of the measured energy performance from the n_1 tests as follows:

$$s_{x_1} = \frac{s_1}{\sqrt{n_1}} \qquad [3]$$

(e)(1) For an energy efficiency standard (EES), determine the appropriate lower control limit (LCL$_1$) according to:

$$LCL_1 = EES - ts_{x_1} \qquad [4a]$$

or

$$LCL_1 = 0.95 EES, \qquad [4b]$$

And use whichever is greater. Where EES is the energy efficiency standard and t is a statistic based on a 97.5 percent, one-sided confidence limit and a sample size of n_1.

(2) For an energy consumption standard (ECS), determine the appropriate upper control limit (UCL$_1$) according to:

$$UCL_1 = ECS + ts_{x_1} \qquad [5a]$$

or

$$UCL_1 = 1.05 ECS, \qquad [5b]$$

And use whichever is less, where ECS is the energy consumption standard and t is a statistic based on a 97.5 percent, one-sided confidence limit and a sample size of n_1.

(f)(1) Compare the sample mean to the control limit.

(i) The basic model is in compliance and testing is at an end if:

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(A) For an energy or water efficiency standard, the sample mean is equal to or greater than the lower control limit, or

(B) For an energy or water consumption standard, the sample mean is equal to or less than the upper control limit.

APPENDIX C TO SUBPART C OF PART 429—SAMPLING PLAN FOR ENFORCEMENT TESTING OF DISTRIBUTION TRANSFORMERS

(a) When testing distribution transformers, the number of units in the sample (m_1) shall be in accordance with §429.47(a) and DOE shall perform the following number of tests:

(1) If DOE tests four or more units, it will test each unit once;

(2) If DOE tests two or three units, it will test each unit twice; or

(3) If DOE tests one unit, it will test that unit four times.

(b) DOE shall determine compliance as follows:

(1) Compute the mean (X_1) of the measured energy performance of the n_1 tests in the first sample as follows:

$$X_1 = \frac{1}{n_1} \sum_{i=1}^{n_1} X_i \qquad [1]$$

where X_i is the measured efficiency of test i.

(2) Compute the sample standard deviation (S_1) of the measured efficiency of the n_1 tests in the first sample as follows:

$$S_1 = \sqrt{\sum_{i=1}^{n_1} \frac{(X_i - X_1)^2}{n_1 - 1}} \qquad [2]$$

(3) Compute the standard error ($SE(X_1)$) of the mean efficiency of the first sample as follows:

$$SE(X_1) = \frac{S_1}{\sqrt{n_1}} \qquad [3]$$

(4) Compute the sample size discount ($SSD(m_1)$) as follows:

$$SSD(m_1) = \frac{100}{1 + \left(1 + \frac{0.08}{\sqrt{m_1}}\right)\left(\frac{100}{RE} - 1\right)} \qquad [4]$$

where m_1 is the number of units in the sample, and RE is the applicable DOE efficiency when the test is to determine compliance with the applicable energy conservation standard, or is the labeled efficiency when the test is to determine compliance with the labeled efficiency value.

(5) Compute the lower control limit (LCL₁) for the mean of

$$LCL_1 = SSD(m_1) - tSE(\bar{X}_1) \qquad [5]$$

Where t is statistic based on a 97.5 percent one-tailed t test with degrees of freedom (from Appendix A) $n_1 - 1$.

(6) Compare the mean of the first sample (X_1) with the lower control limit (LCL₁) to determine one of the following:

(i) If the mean of the first sample is below the lower control limit, then the basic model is not compliant and testing is at an end.

(ii) If the mean is equal to or greater than the lower control limit, no final determination of compliance or noncompliance can be made; proceed to Step (7).

(7) Determine the recommended sample size (n) as follows:

$$n = \left[\frac{tS_1(108 - 0.08RE)}{RE(8 - 0.08RE)}\right]^2 \qquad [6]$$

Given the value of n, determine one of the following:

(i) If the value of n is less than or equal to n_1 and if the mean energy efficiency of the first sample (X_1) is equal to or greater than the lower control limit (LCL₁), the basic model is in compliance and testing is at an end.

(ii) If the value of n is greater than n_1, the basic model is not compliant. The size of a second sample n_2 is determined to be the smallest integer equal to or greater than the difference $n - n_1$. If the value of n_2 so calculated is greater than $21 - n_1$, set n_2 equal to $21 - n_1$.

(8) Compute the combined (X_2) mean of the measured energy performance of the n_1 and n_2 units of the combined first and second samples as follows:

$$\bar{X}_2 = \frac{1}{n_1 + n_2} \sum_{i=1}^{n_1+n_2} X_i \qquad [7]$$

(9) Compute the standard error (SE(X_2)) of the mean full-load efficiency of the n_1 and n_2 units in the combined first and second samples as follows:

$$SE(\bar{X}_2) = \frac{S_1}{\sqrt{n_1 + n_2}} \qquad [8]$$

(Note that S_1 is the value obtained above in (2).)

(10) Set the lower control limit (LCL₂) to,

$$LCL_2 = SSD(m_1) - tSE(\bar{\bar{X}}_2)$$ [9]

where t has the value obtained in (5) and $SSD(m_1)$ is sample size discount determined in (4), and compare the combined sample mean (X_2) to the lower control limit (LCL_2) to determine one of the following:

(i) If the mean of the combined sample (X_2) is less than the lower control limit (LCL_2), the basic model is not compliant and testing is at an end.

(ii) If the mean of the combined sample (X_2) is equal to or greater than the lower control limit (LCL_2), the basic model is in compliance and testing is at an end.

[76 FR 12451, Mar. 7, 2011; 76 FR 24781, May 2, 2011]

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

Subpart A—General Provisions