DEPARTMENT OF ENERGY

10 CFR Parts 429, 430, and 431

[EERE–2023–BT–CE–0001]

Energy Conservation Program: Energy Conservation Standards and Test Procedures for Certain Consumer Products and Commercial Equipment; Corrections

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Final rule; correcting amendments.

SUMMARY: The U.S. Department of Energy (''DOE'') is publishing a final rule to amend and correct certain energy conservation standards and test procedures of consumer products and commercial and industrial equipment, as described in sections I and II of this document. The changes addressed in this document are technical in nature, and neither the errors nor the corrections in this document affect the substance of any rulemaking or any conclusions reached in support of any final rule.

DATES: *Effective Date:* January 21, 2025. The incorporation by reference of certain material listed in this rule was approved by the Director of the Federal Register as of September 30, 2022, April 24, 2023, June 5, 2023, and June 14, 2023.

FOR FURTHER INFORMATION CONTACT:

Mr. Troy Watson, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 449–9387. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Mr. Eric Stas. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–4798. Email: *Eric.Stas@hq.doe.gov.*

SUPPLEMENTARY INFORMATION:

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I. Background

A. Automatic Commercial Ice Makers

On November 1, 2022, DOE published a final rule in the **Federal Register** amending the test procedure for automatic commercial ice makers (''ACIMs'') (87 FR 65856; ''November 2022 ACIM Final Rule''). As part of the November 2022 ACIM Final Rule, DOE codified certification requirements for ACIMs at title 10 of the Code of Federal Regulations (''CFR'') 429.45. However, in the publication of the November 2022 ACIM Final Rule, DOE inadvertently updated 10 CFR 429.45(a)(2)(ii) with a typographical error in the formula for the upper 95-percent confidence limit (''UCL'') which used a ''minus'' sign instead of a ''plus'' sign between the terms of the UCL formula (*see* 87 FR 65856, 65899 (Nov. 1, 2022)). This document identifies and corrects this error.

B. Integrated Light-Emitting Diode Lamps

On July 1, 2016, DOE published a final rule in the **Federal Register** amending the test procedure for integrated light-emitting diode (''LED'') lamps (81 FR 43404; ''July 2016 Integrated LED Lamps Final Rule''). In the July 2016 Integrated LED Lamps Final Rule, DOE adopted the requirement that testing of lumen output, input power, lamp efficacy, power factor, correlated color temperature (''CCT''), color rendering index (''CRI''), lifetime, and standby mode power (if applicable) for integrated LED lamps be conducted by test laboratories accredited by National Voluntary Laboratory Accreditation Program (''NVLAP'') or an accrediting organization recognized by the International Laboratory Accreditation Cooperation (''ILAC''), as codified at 10 CFR 429.56(b)(2). Further, in the July 2016 Integrated LED Lamps Final Rule, DOE provided that it would state directly that accreditation by an Accreditation Body that is a signatory member to the ILAC Mutual Recognition Arrangement (''MRA'') is an acceptable means of laboratory accreditation. 81 FR 43404, 43419 (July 1, 2016). However, DOE inadvertently did not update the certification requirements for integrated LED lamps in 10 CFR 429.56(b)(2) to reflect this statement. This document identifies and corrects this error by specifying in 10 CFR 429.56(b)(2) that the certification report must include the testing laboratory's ILAC accreditation body's identification number or other approved identification assigned by the ILAC accreditation body.

Additionally, in the July 2016 Integrated LED Lamps Final Rule, DOE inadvertently updated 10 CFR 429.56(b)(2) to specify that lifetime be reported in years. As indicated in the determinations of their represented values in 10 CFR 429.56(a)(1)(ii)(D) and 10 CFR 429.56(a)(2), respectively, lifetime must be reported in hours and life must be reported in years. This document identifies and corrects this error.

C. General Service Lamps

On August 31, 2022, DOE published a final rule in the **Federal Register** amending the test procedure for general service fluorescent lamps (''GSFLs''), incandescent reflector lamps (''IRLs''), and general service incandescent lamps (''GSILs'') (87 FR 53618; ''August 2022 Lamps Final Rule''). In the August 2022 Lamps Final Rule, DOE reorganized 10 CFR 429.27 to apply only to GSFLs (as opposed to GSFLs, GSILs, and IRLs), establishing new sections 10 CFR 429.55 for IRLs and 10 CFR 429.66 for GSILs, so that each lamp type (*i.e.,* GSFL, IRL, GSIL) has its own section within 10 CFR part 429. 87 FR 53618, 53629 (August 31, 2022). However, as part of the August 2022 Lamps Final Rule, DOE inadvertently did not update the certification requirements for general service lamps (''GSLs'') in 10 CFR 429.57 to change references to 10 CFR 429.27 to reflect this reorganization. Specifically, 10 CFR 429.57(a)(2), (a)(5) and (b)(3) refer to certification requirements for GSILs at 10 CFR 429.27 when they should reference 10 CFR 429.66. This document identifies and corrects this error.

Additionally, in the August 2022 Lamps Final Rule DOE clarified the definition of ''rated wattage'' in 10 CFR 430.2, which included replacing the references to appendix R with references to the relevant sections in 10 CFR part 429. 87 FR 53618, 53629 (August 31, 2022). However, in making

this update, with respect to GSILs, DOE inadvertently referenced 10 CFR 429.27 instead of 10 CFR 429.66 (see paragraph (2) of the ''rated wattage'' definition in 10 CFR 430.2). This document identifies and corrects this error.

D. Uninterruptible Power Supplies

On September 8, 2022, DOE published a final rule in the **Federal Register** amending the battery charger portion of the battery charger and uninterruptible power supply (''UPS'') test procedure at 10 CFR part 430, subpart B, appendix Y (''appendix Y'') (87 FR 55090, ''September 2022 Battery Charger Final Rule''). The final rule also created a new test procedure for both products at 10 CFR part 430, subpart B, appendix Y1 (''appendix Y1'') that expanded the scope of the battery charger test method and established separate metrics for active mode, standby mode, and off mode for all battery chargers other than uninterruptible power supplies. Manufacturers must continue to use the amended test procedure in appendix Y until the compliance date of any new final rule establishing amended energy conservation standards based on the newly established test procedure in appendix Y1 (although early compliance is permitted). 87 FR 55090, 55122 (Sept. 8. 2022). After the compliance date of new standards for battery chargers other than UPSs using these new metrics, manufacturers may no longer use appendix Y and instead will be required to determine compliance using the updated test procedure at appendix Y1. *Id.* at 87 FR 55125.

On April 19, 2024, DOE published a final rule in the **Federal Register** (''April 2024 UPS Final Rule'') amending the UPS test procedure in appendix Y and appendix Y1, which incorporated by reference relevant portions of the latest version of the relevant industry testing standard, harmonized the current DOE definitions with the definitions in the latest version of the industry standard, and added a no-load testing condition as an optional test. 89 FR 28581.

DOE has identified a reference error in both DOE's UPS enforcement provisions at 10 CFR 429.134(o), as well as appendix Y of the UPS test procedure. In 10 CFR 429.134(o), and in sections 0.1(d), 0.1(p), 0.1(q), 0.1(r), and 4.3.4 of appendix Y, DOE incorrectly referenced sections 2.28.1 through 2.28.3 of appendix Y for UPS architecture tests. The correct reference should be sections 2.27.1 through 2.27.3 of appendix Y. DOE additionally notes that the UPS enforcement provisions should also have been updated to address how to determine the UPS architecture of a unit tested using appendix Y1. This document identifies and corrects these reference errors.

In the April 2024 UPS Final Rule, DOE also updated the introductory note to appendix Y. 89 FR 28581, 28592 (April 19, 2024). DOE intended to replace the introductory note, to add an introductory table, and to remove the introductory text to appendix Y. However, as written, the final rule did not remove the now-obsolete introductory text. This document identifies and removes this text.

E. Water Heaters

The test procedure established for consumer water heaters and residential-duty commercial water heaters is located in DOE's regulations at 10 CFR part 430, subpart B, appendix E, ''Uniform Test Method for Measuring the Energy Consumption of Water Heaters'' (''appendix E''), and it specifies that tests must be conducted under specific conditions, depending on the type of water heater being tested. On June 21, 2023, the DOE published a final rule in the **Federal Register** adopting an amended test procedure for consumer water heaters and residential-duty commercial water heaters (88 FR 40406; ''June 2023 Water Heater Final Rule'').

In the preamble to the June 2023 Water Heater final rule, DOE discussed that it was amending the ambient air temperature tolerances required for tests conducted on all water heaters other than heat pump water heaters (*i.e.,* for ''non-heat pump water heaters''), which was to be specified at section 2.2.1 of appendix E. 88 FR 40406, 40435–40436 (June 21, 2023). Specifically, in section III.C.4 of the June 2023 Water Heater Final Rule, DOE explained that it had initially proposed in a notice of proposed rulemaking (''NOPR'') published in the **Federal Register** on January 11, 2022 (87 FR 1554; ''January 2022 Water Heater NOPR'') to update the ambient temperature requirement for non-heat pump water heaters to require that the ambient temperature during testing must be an average of 67.5 °F ± 2.5 °F, with a maximum deviation of 67.5 °F ± 5 °F, as opposed to only a maximum deviation of 67.5 °F ± 2.5 °F as specified in the test procedure at that time. In the June 2023 Water Heater Final Rule, DOE concluded that, after considering comments on the January 2022 Water Heater NOPR, it was adopting the changes to ambient air temperature and relative humidity tolerances as proposed. 88 FR 40406, 40435–40436 (June 21, 2023).

However, the relevant regulatory text of section 2.2.1 in appendix E, as amended by the June 2023 Water Heater Final Rule, does not reflect these amended tolerances and improperly maintained the values specified under the previous version of DOE's test procedure for the subject water heaters. This document identifies and corrects this error.

DOE also discovered a typographical error in section 6.3.2 of appendix E. Section 6.3.2 of appendix E addresses the calculations for mass of water removed during each draw of the 24-hour simulated-use test. In that section, it is written that the volume of water must be multiplied by the density of the water during each draw of the 24-hour simulated-use test to arrive at the mass of water removed during each draw of the 24-hour simulated-use test. Throughout appendix E, the symbol ρ (the lowercase symbol for the Greek letter ''rho'') is used to represent density, including the definition for these values in section 6.3.2 of appendix E. However, the first equation in section 6.3.2 of appendix E incorrectly uses the term $P_{del,i}$, using the letter P rather than the symbol ρ. This document identifies and corrects this error.

Additionally, a typographical error occurred which inadvertently changed an equation in section 6.3.6 of appendix E. Section 6.3.6 of appendix E addresses the calculation of adjusted daily water heating energy consumption for water heaters with rated storage volumes greater than or equal to 2 gallons, as well as circulating water heaters. In that section, it is written that the difference between the energy used to heat water in the test and the energy required to heat the same quantity of water over a 67 °F temperature rise (altogether represented by the term Q_{HWD}) must be added to the adjusted daily water heating energy consumption value to arrive at the daily energy consumption value. However, the equation printed directly below shows the terms being subtracted instead of being added together as the text had indicated. The equation in section 6.3.6 of appendix E specifically reads ''$Q_{dm} = Q_{da} - Q_{HWD}$'' instead of properly reading ''$Q_{dm} = Q_{da} + Q_{HWD}$.'' This document identifies and corrects this error as well.

Another printing error caused the inadvertent deletion of the mathematical equation from section 6.4.7 of appendix E that identifies how to calculate the annual fossil fuel energy consumption of a water heater with rated storage volume less than 2 gallons. The annual fossil fuel energy consumption for such a product is equal to the total annual energy consumption

minus the electrical energy consumption (adjusted from kilowatts to Btu per hour). Thus, the equation should read, ''$E_{annual,f} = E_{annual} - (E_{annual,e} \times 3{,}412)$'' as it did in section 6.4.6 of appendix E prior to the June 2023 Water Heater Final Rule which renumbered the section. This document identifies and corrects this error.

This document also identifies and corrects typographical errors pertaining to the amended standards for water heaters found at 10 CFR 430.32(d). On May 6, 2024, DOE published a final rule in the **Federal Register** adopting amended energy conservation standards for consumer water heaters (89 FR 37778; ''May 2024 Water Heater Final Rule''). Throughout the May 2024 Water Heater Final Rule, DOE discussed transitioning standards for consumer water heaters to be based on an effective storage volume metric, as opposed to the previously used rated storage volume metric. Table I.1 in the May 2024 Water Heater Final Rule demonstrated how the amended standards (with compliance required beginning on May 6, 2029) would be based on effective storage volume. *Id.* at 89 FR 37780–37781. However, when adopting these standards into the regulatory text codified at 10 CFR 430.32(d)(2), the table inadvertently maintained a reference to the rated storage volume metric. *Id.* at 89 FR 37944. This document corrects the amended standards table to read ''Effective storage volume and input rating (*if applicable*)'' instead of ''Rated storage volume and input rating (*if applicable*)'' at 10 CFR 430.32(d)(2).

In addition, the current standards, which use the rated storage volume metric, remain applicable until May 6, 2029. The May 2024 Water Heater Final Rule maintained these standards at 10 CFR 430.32(d)(1). However, the adopted regulatory text at 10 CFR 430.32(d)(1) included a typographical error with respect to the compliance dates for the standards therein. Section (d)(1) of 10 CFR 430.32 reads ''The uniform energy factor of water heaters manufactured May 6, 2029 shall not be less than the following'' instead of ''The uniform energy factor of water heaters manufactured *before* May 6, 2029 shall not be less than the following'' (emphasis added on the word ''before''). This document corrects this error as well.

F. Portable Air Conditioners

On May 15, 2023, DOE published a final rule in the **Federal Register** establishing a new test procedure for portable air conditioners (''ACs'') at 10 CFR part 430, subpart B, appendix CC1, ''Uniform Test Method for Measuring the Energy Consumption of Portable Air Conditioners'' (''appendix CC1'') (88 FR 31102; ''May 2023 Portable AC Final Rule''). This test procedure must be used to determine compliance with any amended portable AC energy conservation standards that use the Annualized Energy Efficiency Ratio (''AEER'') metric. 88 FR 31102, 31106 (May 15, 2023). In the May 2023 Portable AC Final Rule, as part of appendix CC1, DOE adopted an updated seasonally adjusted cooling capacity (''SACC'') calculation that consists of a weighted average of the cooling capacities measured at the 95 °F and 83 °F test conditions, each adjusted for duct heat transfer capacity losses and infiltration air capacity losses. For single-speed portable ACs, the adjusted cooling capacity for the 83 °F test condition is also multiplied by a load factor of 0.6 for single-duct units and 0.5363 for dual-duct units. 88 FR 31102, 31114 (May 15, 2023).

DOE has identified an error in section 5.1 of appendix CC1, which contains the calculations of adjusted cooling capacity for portable ACs at the 95 °F and 83 °F operating conditions. The identified error is in the formula for adjusted cooling capacity of single-duct single-speed units at 83 °F (''ACC_{83}''), which as published includes the term ''$Q_{infiltration\_95}$.'' This term was included erroneously, and the formula should have used the term ''$Q_{infiltration\_83}$'' to reflect the infiltration heat transfer at 83 °F rather than at 95 °F as is currently shown. This erroneous term is also included in the amplifying instruction for single-speed single-duct units in that section, which should reference the $Q_{infiltration\_83}$ value in addition to $Q_{infiltration\_95}$. This document identifies and corrects these errors.

G. Refrigerators, Refrigerator-Freezers, and Freezers

On January 17, 2024, DOE published a direct final rule in the **Federal Register** adopting amended energy conservation standards for refrigerators, refrigerator-freezers, and freezers (89 FR 3026; ''January 2024 Refrigerator Direct Final Rule''). In the publication of the January 2024 Refrigerator Direct Final Rule, DOE inadvertently updated 10 CFR 430.32(a)(1) with a typographical error which states the current energy conservation standards for refrigerators, refrigerator-freezers, and freezers ''apply to products manufactured on or before September 15, 2014.'' This document identifies and corrects this error, with text that reads ''standards apply to products manufactured on or after September 15, 2014.''

In the January 2024 Refrigerator Direct Final Rule, DOE also inadvertently updated 10 CFR 430.32(a)(1) with another typographical error which lists the equation for the maximum energy use for product class 4I–BI as ''10.22AV + 441.4.2.'' This document identifies and corrects this error, to reflect the correct equation of ''10.22AV + 441.4.''

H. Commercial Package Air Conditioners and Heat Pumps

On May 20, 2024, DOE published a final rule in the **Federal Register** amending the current test procedures for air-cooled commercial unitary air conditioners with a rated cooling capacity greater than or equal to 65,000 Btu/h, evaporatively-cooled commercial unitary air conditioners, and water-cooled commercial unitary air conditioners (referred to collectively as ''CUACs and CUHPs'') (89 FR 43986; ''May 2024 CUAC and CUHP TP Final Rule'').

As part of the publication of the May 2024 CUAC and CUHP TP Final Rule, DOE updated Table 1 to paragraph (b) of 10 CFR 431.96, which lists the test procedure for all commercial air conditioners and heat pumps, and included a typographical error in one of the column headers. Specifically, the column heading in Table 1 to paragraph (b) erroneously stated, ''Use tests, conditions, an procedures in'' instead of ''Use tests, conditions and procedures in'' (*see* 89 FR 43986, 44037 (May 20, 2024). This document identifies and corrects this error.

I. Distribution Transformers

The applicable energy conservation standard requirements for distribution transformers are contained in DOE's regulations at 10 CFR part 431, subpart K and are applicable to products that meet the definition of ''distribution transformer'' as codified at 10 CFR 431.192. 10 CFR 431.192 also includes definitions for several kinds of equipment explicitly excluded from the definition of ''distribution transformer.''

On April 22, 2024, DOE published a final rule in the **Federal Register** adopting amended energy conservation standards for distribution transformers and adopting minor edits to the definitions relevant for distribution transformers, including clarifying edits to the definition of ''special-impedance transformer'' (89 FR 29834; ''April 2024 Transformer Final Rule''). In the publication of the April 2024 Transformer Final Rule, DOE updated 10 CFR 431.192 with a typographical error in the titles of Tables 1 and 2 relevant for the definition of ''special-impedance transformer.'' Specifically,

the headings for Table 1 and Table 2 each state, ''to the Definition o 'Special-Impedance Transformer.' '' This document identifies and corrects this error with text that reads, ''to the Definition of 'Special-Impedance Transformer.' ''

J. Walk-In Coolers and Walk-In Freezers

On May 4, 2023, DOE published a final rule in the **Federal Register** amending the test procedures for walk-in coolers and walk-in freezers (referred to as ''walk-ins'' or ''WICFs'') (88 FR 28780; ''May 2023 WICF TP Final Rule''). As part of the May 2023 WICF TP Final Rule, DOE adopted a new test procedure at 10 CFR part 431, subpart R, appendix C1 (''appendix C1'') and a new efficiency metric (*i.e.,* annual walk-in energy factor 2 (''AWEF2'')), for walk-in refrigeration systems. Appendix C1 references the Air-Conditioning, Heating, and Refrigeration Institute (''AHRI'') industry test standard AHRI 1250–2020, ''2020 Standard for Performance Rating of Walk-in Coolers and Freezers.''

AWEF2 is the ratio of annual total heat removed from a walk-in box (*i.e.,* the annual walk-in box load) to the annual total energy input. For all outdoor dedicated condensing refrigeration systems (*i.e.,* outdoor matched pairs, single-package dedicated systems, and dedicated condensing units), annual walk-in box load and annual energy use are determined by summing the walk-in box load and energy use for 20 different bins and corresponding bin temperatures multiplied by the number of hours in each bin (*see, e.g.,* section 7.4.1 of AHRI 1250–2020). Power values for each bin are interpolated or extrapolated based on the power measurements taken at three different outdoor ambient temperatures (95 °F, 59 °F, and 35 °F). For outdoor dedicated condensing refrigeration systems, there are three off-cycle tests conducted at these same three outdoor ambient conditions (95 °F, 59 °F, and 35 °F), and, therefore, there are three separate measurements of off-cycle condensing unit power (*see, e.g.,* Table 5 of AHRI 1250–2020).

In the May 2023 WICF TP Final Rule, for outdoor dedicated condensing refrigeration systems, DOE deviated from the AHRI 1250–2020 calculations for off-cycle energy use in AWEF2 because the equations for refrigeration system total power input by each bin temperature t_j (*e.g.,* equation 13 of AHRI 1250–2020) do not use off-cycle power values that vary by bin temperature. Because the condensing unit off-cycle power may vary as a function of outdoor temperature, DOE adopted instructions for calculating condensing unit off-cycle power as a function of outdoor temperature based on the measurements made at the three outdoor test condition temperatures. 88 FR 28780, 28812–28813 (May 4, 2023). DOE adopted these provisions for all outdoor dedicated condensing systems, regardless of whether they are high-, medium-, or low-temperature dedicated condensing systems.

Section 3.4.12.2 of appendix C1 specifies how to calculate AWEF2 for high-temperature, outdoor matched pairs or single-packaged refrigeration systems. Section 3.4.12.2 erroneously specifies that the condensing unit off-cycle power, $\dot{E}_{cu,off}$, is measured as described in section C3.5 of AHRI 1250–2020 and does not specify that condensing unit off-cycle power should be determined based on bin temperature t_j per section 3.4.3.3 of appendix C1. This document identifies and corrects this error with text that specify that condensing unit off-cycle power for high-temperature, outdoor matched pairs or single-packaged refrigeration systems should be determined based on bin temperature t_j per section 3.4.3.3 of appendix C1.

K. Circulator Pumps

On May 20, 2024, DOE published a final rule in the **Federal Register** establishing energy conservation standards for circulator pumps (89 FR 44464; ''May 2024 Circulator Pump Final Rule''). In the publication of the May 2024 Circulator Pump Final Rule, DOE updated the section heading of 10 CFR 431.465 which previously read ''Pumps energy conservation standards and their compliance dates'' to read ''Circulator pumps energy conservation standards and their compliance dates.'' This amendment was in error, as this section of the CFR includes energy conservation standards for dedicated purpose pool pumps and commercial and industrial pumps in addition to circulator pumps. This document identifies and corrects this error by reverting to the previous section heading.

L. Commercial and Industrial Pumps

The test procedure established for commercial and industrial pumps is located in DOE's regulations at 10 CFR part 431, subpart Y, appendix A, ''Uniform Test Method for the Measurement of Energy Consumption of Pumps'' (''appendix A''). Sections IV.D.2 and VI.D.2 of appendix A outline how to determine the best efficiency point (''BEP'') using the testing-based approach for pumps sold with motors. On March 24, 2023, DOE published a final rule in the **Federal Register** adopting an amended test procedure for commercial and industrial pumps (88 FR 17934; ''March 2023 Pumps Final Rule'').

DOE has identified errors in sections IV.D.2 and VI.D.2 of appendix A, as finalized in the March 2023 Pumps Final Rule, which erroneously reference ''pump efficiency,'' calculated using ''pump power input,'' in describing how to determine the BEP using the testing-based approach for pumps sold with motors; whereas, those sections should instead reference ''overall efficiency,'' calculated using ''driver power input,'' consistent with the wording as it appeared prior to the amendments of the March 2023 Pumps Final Rule. This document identifies and corrects these errors by reverting to the prior language.

II. Need for Correction

A. Automatic Commercial Ice Makers

As published, the regulatory text in 10 CFR 429.45(a)(2)(ii) will likely cause confusion and may mislead interested parties regarding how to properly determine the UCL for ACIM certification purposes. The relevant changes to 10 CFR 429.45(a)(2)(ii) correct the inadvertent formula error. Accordingly, the changes addressed in this document are technical in nature.

B. Integrated Light-Emitting Diode Lamps

As published, the regulatory text in 10 CFR 429.56(b)(2) will likely cause confusion and may mislead interested parties regarding the entities permitted to test integrated LED lamps and the units to be used in making certain representations. The relevant changes to 10 CFR 429.56(b)(2) correct the units used and the testing laboratory requirements. Accordingly, the changes addressed in this document are technical in nature.

C. General Service Lamps

As published, the erroneous section references in the regulatory text in sections (a) and (b) of 10 CFR 429.57 and the definition of ''rated wattage'' in 10 CFR 430.2 will likely cause confusion and may mislead interested parties regarding how to properly test and certify GSFLs, IRLs, and GSILs. The relevant changes to sections (a) and (b) of 10 CFR 429.57 and the definition of ''rated wattage'' in 10 CFR 430.2 correct the reference errors. Accordingly, the changes addressed in this document are technical in nature.

D. Uninterruptible Power Supplies

As published, the now-obsolete introductory text in appendix Y, the

erroneous section references in the regulatory text in 10 CFR 429.134(o), and sections 0 and 4.3.4 of appendix Y will likely cause confusion and may mislead interested parties regarding test procedure applicability date, and regarding how to properly determine UPS architecture. The relevant changes to 10 CFR 429.134(o) and sections 0 and 4.3.4 of appendix Y correct the reference errors related to UPS architecture testing. Accordingly, the changes addressed in this document are technical in nature.

E. Water Heaters

As published, the regulatory text in sections 2.2.1, 6.3.6, and 6.4.7 of appendix E, will likely cause confusion and may mislead interested parties regarding how to properly conduct testing under DOE's consumer water heaters and residential-duty commercial water heaters test procedure. The relevant changes to section 2.2.1 of appendix E, involving a tolerance to ambient temperature requirement for non-heat pump water heaters, was discussed in the June 2023 Water Heater Final Rule's preamble, but it was inadvertently omitted from the amended regulatory text. The relevant changes to section 6.3.2 and section 6.3.6 of appendix E, involving the proper nomenclature for mass of water removed and the proper calculation of daily energy consumption, respectively, fix inadvertent typographical errors. The changes to section 6.4.7 of appendix E correct the inadvertent deletion of an equation used to compute annual fossil fuel energy consumption. Additionally, the relevant changes to the amended standards at 10 CFR 430.32(d)(1)–(2), involving the description of the compliance date and the storage volume metric, also resolve inadvertent typographical errors. Accordingly, the changes addressed in this document are technical in nature.

F. Portable Air Conditioners

As published, the regulatory text in section 5.1 of appendix CC1 to subpart B of 10 CFR part 430 will likely result in confusion as to the meaning of these terms and the references to provisions elsewhere in the test procedure. The relevant changes to section 5.1 of appendix CC1 correct the typographical errors introduced in the May 2023 Portable AC Final Rule. Accordingly, the changes addressed in this document are technical in nature.

G. Refrigerators, Refrigerator-Freezers, and Freezers

As published, the regulatory text in 10 CFR 430.32(a)(1) will likely cause confusion and may mislead interested parties regarding applicability of the current energy conservation standards of refrigerators, refrigerator-freezers, and freezers. The relevant changes to 10 CFR 430.32(a)(1), correct the inadvertent typographical errors introduced in the January 2024 Refrigerator Direct Final Rule. Accordingly, the changes addressed in this document are editorial in nature.

H. Commercial Package Air Conditioners and Heat Pumps

As published, the regulatory text in section 10 CFR 431.96 may cause confusion to interested parties regarding how to properly conduct testing under DOE's commercial air conditioner and heat pump test procedures. The relevant changes to 10 CFR 431.96 correct the typographical error introduced in the May 2024 CUAC and CUHP TP Final Rule. Accordingly, the changes addressed in this document are editorial in nature.

I. Distribution Transformers

As published, the regulatory text in section 10 CFR 431.192 will likely cause confusion to interested parties regarding definitions relevant to the current energy conservation standards of distribution transformers. The relevant changes to 10 CFR 431.192 correct the typographical error introduced in the April 2024 Transformer Final Rule. Accordingly, the changes addressed in this document are editorial in nature.

J. Walk-In Coolers and Walk-In Freezers

As published, the regulatory text in section 3.4.12.2 of 10 CFR part 431, subpart R, appendix C1 will likely cause confusion and may mislead interested parties regarding how to properly conduct testing of high-temperature, outdoor matched pairs or single-packaged dedicated condensing systems under DOE's walk-in refrigeration systems test procedure. The relevant changes to section 3.4.12.2 of appendix C1 correct the inadvertent error introduced in the May 2023 WICF TP Final Rule. Accordingly, the changes addressed in this document are technical in nature.

K. Circulator Pumps

As published, the title of 10 CFR 431.465 will likely cause confusion and may mislead interested parties regarding the current energy conservation standards of dedicated purpose pool pumps and commercial and industrial pumps. The relevant changes to 10 CFR 431.465 correct the misleading section heading introduced in the May 2024 Circulator Pump Final Rule. Accordingly, the changes addressed in this document are editorial in nature.

L. Commercial and Industrial Pumps

As published, the regulatory text in sections IV.D.2 and VI.D.2 of appendix A to subpart Y of 10 CFR part 431 will likely cause confusion and may mislead interested parties regarding how to properly conduct testing under DOE's commercial and industrial pump test procedure. The relevant changes to 10 CFR part 431, subpart Y, appendix A correct the inadvertent error introduced in the March 2023 Pumps Final Rule. Accordingly, the changes addressed in this document are technical in nature.

III. Procedural Issues and Regulatory Review

DOE has concluded that the determinations made pursuant to the various procedural requirements applicable to the final rules discussed elsewhere in this document related to ACIMs [1]; integrated LED lamps [2]; general service lamps [3]; UPSs [4]; water heaters [5]; portable ACs [6]; refrigerators, refrigerator-freezers, freezers [7]; CUACs and CUHPs [8]; distribution transformers [9]; WICFs [10]; circulator pumps [11]; and commercial and industrial pumps [12] remain unchanged for this final rule correcting amendments.

Pursuant to the Administrative Procedure Act, 5 U.S.C. 553(b)(B), DOE finds that there is good cause to not issue a separate notification to solicit public comment on the changes contained in this document. Issuing a separate notification to solicit public comment would be impracticable, unnecessary, and contrary to the public interest. Neither the errors nor the corrections in this document affect the substance of the aforementioned final rules for the subject consumer products and commercial and industrial equipment or any of the conclusions reached in support of those documents. Additionally, given the energy conservation standards and test procedures that are being corrected are

[1] *See* 87 FR 65856, 65895–65898 (Nov. 1, 2022).

[2] *See* 81 FR 43404, 43420–43425 (July 1, 2016).

[3] *See* 87 FR 53618, 53633–53637 (August 31, 2022).

[4] *See* 87 FR 55090, 55117–55122 (Sept. 8, 2022); 89 FR 28581, 28589–28592 (April 19, 2024).

[5] *See* 88 FR 40406, 40468–40471 (June 21, 2023); 89 FR 37778, 37936–37941 (May 6, 2024).

[6] *See* 88 FR 31102, 31122–31125 (May 15, 2023).

[7] *See* 89 FR 3026, 3109–3112 (Jan. 17, 2024).

[8] *See* 89 FR 4986, 44028–44032 (May 20, 2024).

[9] *See* 89 FR 29834, 30032–30038 (April 22, 2024).

[10] *See* 88 FR 28780; 28827–28834 (May 4, 2023)

[11] *See* 89 FR 44464, 44532–44535 (May 20, 2024).

[12] *See* 88 FR 17934, 17968–17972 (March 24, 2023).

a result of an extensive administrative record with numerous opportunities for public comment, DOE finds additional comment on the technical corrections is unnecessary. Therefore, providing prior notification and an opportunity for public comment on correcting objective, typographical errors that do not change the substance of the relevant energy conservation standards and test procedures serves no useful purpose.

Further, this rule correcting typographical errors makes non-substantive changes to the subject test procedure and energy conservation standards. As such, this rule is not subject to the 30-day delay in effective date requirement of 5 U.S.C. 553(d) otherwise applicable to rules that make substantive changes.

The following standards appear in the amendatory text of this document and were previously approved for the locations in which they appear: ANSI C78.81, ANSI C78.901, AHAM PAC–1–2022, AHRI 1250–2020, and HI 40.6–2021.

IV. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects

10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, Small businesses.

10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Incorporation by reference, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, Small businesses.

10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation, Incorporation by reference, Reporting and recordkeeping requirements.

Signing Authority

This document of the Department of Energy was signed on January 10, 2025, by Jeffrey Marootian, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on January 13, 2025.

Treena V. Garrett,

Federal Register Liaison Officer, U.S. Department of Energy.

For the reasons stated in the preamble, DOE corrects parts 429, 430, and 431 of Chapter II of Title 10, Code of Federal Regulations, by making the following correcting amendments:

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

■ 1. The authority citation for part 429 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 2. Amend § 429.45 by revising paragraph (a)(2)(ii) to read as follows:

§ 429.45 Automatic commercial ice makers.

(a) * * *

(2) * * *

(ii) 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 Student's t-Distribution Values for a 95 percent one-tailed confidence interval with n-1 degrees of freedom (from appendix A to this subpart).

* * * * *

■ 3. Amend § 429.56 by revising paragraph (b)(2) to read as follows:

§ 429.56 Integrated light-emitting diode lamps.

* * * * *

(b) * * *

(2) Values reported in certification reports are represented values. Pursuant to § 429.12(b)(13), a certification report must include the following public product-specific information: The testing laboratory's ILAC accreditation body's identification number or other approved identification assigned by the ILAC accreditation body, the date of manufacture, initial lumen output in lumens (lm), input power in watts (W), lamp efficacy in lumens per watt (lm/W), CCT in kelvin (K), power factor, lifetime in hours (and whether value is estimated), and life in years (and whether value is estimated). For lamps with multiple modes of operation (such as variable CCT or CRI), the certification report must also list which mode was selected for testing and include detail such that another laboratory could operate the lamp in the same mode. Lifetime and life are estimated values until testing is complete. When reporting estimated values, the certification report must specifically describe the prediction method, which must be generally representative of the methods specified in appendix BB. Manufacturers are required to maintain records per § 429.71 of the development of all estimated values and any associated initial test data.

* * * * *

■ 4. Amend § 429.57 by revising paragraphs (a) and (b) to read as follows:

§ 429.57 General service lamps.

(a) *Determination of represented value.* Manufacturers must determine represented values, which includes certified ratings, for each basic model of general service lamp in accordance with following sampling provisions.

(1) The requirements of § 429.11 are applicable to general service lamps, and

(2) For general service incandescent lamps, use § 429.66(a);

(3) For compact fluorescent lamps, use § 429.35(a);

(4) For integrated LED lamps, use § 429.56(a);

(5) For other incandescent lamps, use § 429.66(a);

(6) For other fluorescent lamps, use § 429.35(a); and

(7) For OLED lamps and non-integrated LED lamps, use § 429.56(a).

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

(2) Values reported in certification reports are represented values;

(3) For general service incandescent lamps, use § 429.66(b);

(4) For compact fluorescent lamps, use § 429.35(b);

(5) For integrated LED lamps, use § 429.56(b); and

(6) For other incandescent lamps, for other fluorescent lamps, for OLED lamps and non-integrated LED lamps, pursuant to § 429.12(b)(13), a certification report must include the following public product-specific

information: The testing laboratory's ILAC accreditation body's identification number or other approved identification assigned by the ILAC accreditation body, initial lumen output, input power, lamp efficacy, and power factor. For non-integrated LED lamps, the certification report must also include the input voltage and current used for testing.

* * * * *

■ 5. Amend § 429.134 by revising paragraph (o)(1) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(o) * * *

(1) To determine the uninterruptible power supply (UPS) architecture:

(i) When testing according to appendix Y to subpart B of part 430, perform the UPS architecture tests specified in the definitions of VI, VFD, and VFI in sections 2.27.1 through 2.27.3 of appendix Y to subpart B of 10 CFR part 430.

(ii) When testing according to appendix Y1 to subpart B of part 430, perform the UPS architecture tests specified in the definitions of VI, VFD, and VFI in sections 2.28.1 through 2.28.3 of appendix Y1 to subpart B of 10 CFR part 430.

* * * * *

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 6. The authority citation for part 430 continues to read as follows:

Authority: 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

■ 7. Amend § 430.2 by revising the definition of ''Rated wattage'' to read as follows:

§ 430.2 Definitions.

* * * * *

Rated wattage means:

(1) With respect to fluorescent lamps and general service fluorescent lamps:

(i) If the lamp is listed in ANSI C78.81 (incorporated by reference; see § 430.3) or ANSI C78.901 (incorporated by reference; see § 430.3), the rated wattage of a lamp determined by the lamp designation of Clause 11.1 of ANSI C78.81 or ANSI C78.901;

(ii) If the lamp is a residential straight-shaped lamp, and not listed in ANSI C78.81 (incorporated by reference; see § 430.3), the wattage of a lamp when operated on a reference ballast for which the lamp is designed; or

(iii) If the lamp is neither listed in one of the ANSI standards referenced in paragraph (1)(i) of this definition, nor a residential straight-shaped lamp, a represented value of electrical power for a basic model, determined according to 10 CFR 429.27, and derived from the measured initial input power of a lamp tested according to appendix R to subpart B of this part.

(2) With respect to general service incandescent lamps, a represented value of electrical power for a basic model, determined according to 10 CFR 429.66, and derived from the measured initial input power of a lamp tested according to appendix R to subpart B of this part.

(3) With respect to incandescent reflector lamps, a represented value of electrical power for a basic model, determined according to 10 CFR 429.55, and derived from the measured initial input power of a lamp tested according to appendix R to subpart B of this part.

* * * * *

■ 8. Amend appendix E to subpart B of part 430 by revising sections 2.2.1, 6.3.2, 6.3.6, and 6.4.7 to read as follows:

Appendix E to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Water Heaters

* * * * *

2.

* * *

2.2 * * *

2.2.1 *Non-Heat Pump Water Heaters.* The ambient air temperature shall be maintained at an average of 67.5 °F ± 2.5 °F (19.7 °C ± 1.4 °C) on a continuous basis throughout the test, with a maximum deviation of 67.5 °F ± 5 °F (19.7 °C ± 2.8 °C).

* * * * *

6. * * *

6.3 * * *

6.3.2 *Mass of Water Removed.* Determine the mass of water removed during each draw of the 24-hour simulated-use test ($M_{del,i}$) as:

If the mass of water removed is measured, use the measured value, or, if the volume of water removed is being measured,

$$M_{del,i} = V_{del,i} \times \rho_{del,i}$$

* * * * *

6.3.6 *Adjusted Daily Water Heating Energy Consumption.* The adjusted daily water heating energy consumption, $Q_{da,}$ takes into account that the ambient temperature may differ from the nominal value of 67.5 °F (19.7 °C) due to the allowable variation in surrounding ambient temperature of 65 °F (18.3 °C) to 70 °C (21.1 °C). The adjusted daily water heating energy consumption is computed as:

$$Q_{da} = Q_d - (67.5\,°F - \overline{T}_{a,stby,2})\ UA\ \tau_{stby,2}$$

or,

$$Q_{da} = Q_d - (19.7\,°C - \overline{T}_{a,stby,2})\ UA\ \tau_{stby,2}$$

Where:

Q_{da} = the adjusted daily water heating energy consumption, Btu (kJ).

Q_d = as defined in section 6.3.4 of this appendix.

$\overline{T}_{a,stby,2}$ = the average ambient temperature during the total standby portion, $\tau_{stby,2}$, of the 24-hour simulated-use test, °F (°C).

UA = as defined in section 6.3.4 of this appendix.

$T_{stby,2}$ = the number of hours during the 24-hour simulated-use test when water is not being withdrawn from the water heater.

A modification is also needed to take into account that the temperature difference between the outlet water temperature and supply water temperature may not be equivalent to the nominal value of 67 °F (125 °F–58 °F) or 37.3 °C (51.7 °C–14.4 °C). The following equations adjust the experimental data to a nominal 67 °F (37.3 °C) temperature rise.

The energy used to heat water, Btu/day (kJ/day), may be computed as:

$$Q_{HW} = \sum_{i=1}^{N} \frac{M_{del,i}\ C_{pi}\left(\overline{T}_{del,i} - \overline{T}_{in,i}\right)}{\eta_r}$$

Where:

N = total number of draws in the 24-hour simulated-use test.

$M_{del,i}$ = the mass of water removed during the *i*th draw (i = 1 to N) as calculated in section 6.3.2 of this appendix, lb (kg).

C_{pi} = the specific heat of the water withdrawn during the *i*th draw of the 24-hour simulated-use test, evaluated at ($\overline{T}_{del,i}$ + $\overline{T}_{in,i}$)/2, Btu/(lb·°F) (kJ/(kg·°C)).

$\overline{T}_{del,i}$ = the average water outlet temperature measured during the *i*th draw (i = 1 to N), °F (°C).

$\overline{T}_{in,i}$ = the average water inlet temperature measured during the *i*th draw (i = 1 to N), °F (°C).

η_r = as defined in section 6.3.3 of this appendix.

The energy required to heat the same quantity of water over a 67 °F (37.3 °C) temperature rise, Btu/day (kJ/day), is:

$$Q_{HW,67°F} = \sum_{i=1}^{N} \frac{M_{del,i}\ C_{pi}(125°F - 58°F)}{\eta_r}$$

or,

$$Q_{HW,37.3°C} = \sum_{i=1}^{N} \frac{M_{del,i}\ C_{pi}(51.7°C - 14.4°C)}{\eta_r}$$

The difference between these two values is:

$Q_{HWD} = Q_{HW,67°F} - Q_{HW}$

or,

$Q_{HWD} = Q_{HW,37.3°C} - Q_{HW}$

This difference (Q_{HWD}) must be added to the adjusted daily water heating energy consumption value. Thus, the daily energy consumption value, which takes into account that the ambient temperature may not be 67.5 °F (19.7 °C) and that the temperature rise across the storage tank may not be 67 °F (37.3 °C) is:

$Q_{dm} = Q_{da} + Q_{HWD}$

* * * * *

6.4 * * *

6.4.7 *Annual Fossil Fuel Energy Consumption.* The annual fossil fuel energy consumption for water heaters with rated storage volumes less than 2 gallons, $E_{annual,f}$, is computed as:

$E_{annual,f} = E_{annual} - (E_{annual,e} \times 3412)$

Where:

E_{annual} = the annual energy consumption as defined in section 6.4.5 of this appendix, Btu (kJ).

$E_{annual,e}$ = the annual electrical energy consumption as defined in section 6.4.6 of this appendix, kWh.

3412 = conversion factor from kWh to Btu.

* * * * *

■ 9. Amend appendix Y to subpart B of part 430 by revising Note 1 and table and sections 0.1(d), 0.1(p), 0.1(q), 0.1(r), and 4.3.4 to read as follows:

Appendix Y to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Battery Chargers

Note 1: For all Battery Chargers, including UPSs, compliance with the relevant standard in § 430.32(z) or any representation must be based upon results generated under the corresponding appendix listed in the following table:

	Battery chargers other than UPSs	UPS
On or After July 3, 2024 and Before October 16, 2024 ...	Use appendix Y as it appeared on either March 7, 2023, or July 3, 2024.	Use appendix Y as it appeared on either March 7, 2023, or July 3, 2024.
On or After October 16, 2024 and Before compliance date of any new or amended standards published any time after September 2022.	Use appendix Y as it appeared on July 3, 2024..	Use appendix Y as it appeared on July 3, 2024.
On or After compliance date of any new or amended standards published any time after September 2022.	Use appendix Y1	Use appendix Y1.

0. * * *

0.1 * * *

(d) Section 5.2, UPS input specification, as specified in section 2.27.2 of this appendix;

* * * * *

(p) Section 6.2.2.7, AC input failure, as specified in Note to section 2.27.1 of this appendix;

(q) Section 6.4, Type test procedure (electrical); Section 6.4.1, Input—AC input power compatibility; Section 6.4.1.2, Steady state input voltage tolerance and VI input independency, as specified in Note to section 2.27.3 of this appendix;

(r) Section 6.4.1.3, Combined input voltage/frequency tolerance and VFI input independency, as specified in Note to section 2.27.2 of this appendix;

* * * * *

4. * * *

4.3. * * *

4.3.4 UUT Classification

Optional Test for determination of UPS architecture. Determine the UPS architecture by performing the tests specified in the definitions of VI, VFD, and VFI (sections 2.27.1 through 2.27.3 of this appendix).

* * * * *

■ 10. Amend appendix CC1 to subpart B of part 430 by revising section 5.1 to read as follows:

Appendix CC1 to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Portable Air Conditioners

* * * * *

5. * * *

5.1 *Adjusted Cooling Capacity.* Calculate the adjusted cooling capacities at the 95 °F and 83 °F operating conditions specified below of the sample unit, in Btu/h, according to the following equations.

For a single-duct single-speed unit:

$ACC_{95} = Capacity_{SD} - Q_{duct\_SD} - Q_{infiltration\_95}$

$ACC_{83} = 0.6000 \times (Capacity_{SD} - Q_{duct\_SD} - Q_{infiltration\_83})$

For a single-duct variable-speed unit:

$ACC_{95} = Capacity_{SD\_Full} - Q_{duct\_SD\_Full} - Q_{infiltration\_95}$

$ACC_{83} = Capacity_{SD\_Low} - Q_{duct\_SD\_Low} - Q_{infiltration\_83\_Low}$

For a dual-duct single-speed unit:

$ACC_{95} = Capacity_{DD\_95\_Full} - Q_{duct\_DD\_95\_Full} - Q_{infiltration\_95}$

$ACC_{83} = 0.5363 \times (Capacity_{DD\_83} - Q_{duct\_DD\_83} - Q_{infiltration\_83})$

For a dual-duct variable-speed unit:

$ACC_{95} = Capacity_{DD\_95\_Full} - Q_{duct\_DD\_95\_Full} - Q_{infiltration\_95}$

$ACC_{83} = Capacity_{DD\_Low} - Q_{duct\_DD\_83\_Low} - Q_{infiltration\_83\_Low}$

Where:

ACC_{95} and ACC_{83} = adjusted cooling capacity of the sample unit, in Btu/h, calculated from testing at:

For a single-duct single-speed unit, test configuration 2A in Table 2 of AHAM PAC–1–2022.

For a single-duct variable-speed unit, test configurations 2B and 2C in Table 2 of AHAM PAC–1–2022.

For a dual-duct single-speed unit, test configurations 1A and 1B in Table 2 of AHAM PAC–1–2022.

For a dual-duct variable-speed unit: test configurations 1C and 1E in Table 2 of AHAM PAC–1–2022.

$Capacity_{SD}$, $Capacity_{SD\_Full}$, $Capacity_{SD\_Low}$, $Capacity_{DD\_95}$, $Capacity_{DD\_83}$, $Capacity_{DD\_95\_Full}$, and $Capacity_{DD\_83\_Low}$ = cooling capacity, in Btu/h, measured in testing at test configuration 2A, 2B, 2C, 1A, 1B, 1C, and 1E of Table 2 in section 8.1 of AHAM PAC–1–2022, respectively.

Q_{duct_SD}, $Q_{duct\_SD\_Full}$, $Q_{duct\_SD\_Low}$, $Q_{duct\_DD\_95}$, $Q_{duct\_DD\_83}$, $Q_{duct\_DD\_95\_Full}$, and $Q_{duct\_DD\_83\_Low}$ = duct heat transfer while operating in cooling mode for each duct configuration, compressor speed (where applicable) and temperature condition (where applicable), calculated in section 9.1 of AHAM PAC–1–2022, in Btu/h.

$Q_{infiltration\_95}$, $Q_{infiltration\_83}$, and $Q_{infiltration\_83\_Low}$ = total infiltration air heat transfer in cooling mode, in Btu/h, for each of the following compressor speed and duct configuration combinations:

For a single-duct single-speed unit, use $Q_{infiltration\_95}$ and $Q_{infiltration\_83}$ as calculated for a single-duct single-speed unit in section 9.2 of AHAM PAC–1–2022.

For a single-duct variable-speed unit, use $Q_{infiltration\_95}$ and $Q_{infiltration\_83\_Low}$ as calculated for a single-duct variable-speed unit in section 9.2 of AHAM PAC–1–2022.

For a dual-duct single-speed unit, use $Q_{infiltration\_95}$ and $Q_{infiltration\_83}$ as calculated for a dual-duct single-speed unit in section 9.2 of AHAM PAC–1–2022.

For a dual-duct variable-speed unit, use $Q_{infiltration\_95}$ and $Q_{infiltration\_83\_Low}$ as calculated for a dual-duct variable-speed unit in section 9.2 of AHAM PAC–1–2022.

0.6000 and 0.5363 = empirically-derived load-based capacity adjustment factor for a single-duct and dual-duct single-speed unit, respectively, when operating at test conditions 2A and 1B.

* * * * *

■ 11. Amend § 430.32 by revising paragraph (a)(1), the introductory text to (d)(1), and paragraph (d)(2) to read as follows:

§ 430.32 Energy and water conservation standards and their compliance dates.

* * * * *

(a) * * *

(1) The following standards apply to products manufactured on or after September 15, 2014, and before the 2029/2030 compliance dates depending on product class (see paragraphs (a)(2) and (a)(3) of this section).

TABLE 1 TO PARAGRAPH (a)(1)

Product class	Equations for maximum energy use (kWh/yr)	
	based on AV (ft^3)	based on av (L)
1. Refrigerators and refrigerator-freezers with manual defrost	7.99AV + 225.0	0.282av + 225.0
1A. All-refrigerators—manual defrost	6.79AV + 193.6	0.240av + 193.6
2. Refrigerator-freezers—partial automatic defrost	7.99AV + 225.0	0.282av + 225.0
3. Refrigerator-freezers—automatic defrost with top-mounted freezer without an automatic icemaker	8.07AV + 233.7	0.285av + 233.7
3–BI. Built-in refrigerator-freezer—automatic defrost with top-mounted freezer without an automatic ice-maker	9.15AV + 264.9	0.323av + 264.9
3I. Refrigerator-freezers—automatic defrost with top-mounted freezer with an automatic icemaker without through-the-door ice service	8.07AV + 317.7	0.285av + 317.7
3I–BI. Built-in refrigerator-freezers—automatic defrost with top-mounted freezer with an automatic ice-maker without through-the-door ice service	9.15AV + 348.9	0.323av + 348.9
3A. All-refrigerators—automatic defrost	7.07AV + 201.6	0.250av + 201.6
3A–BI. Built-in All-refrigerators—automatic defrost	8.02AV + 228.5	0.283av + 228.5
4. Refrigerator-freezers—automatic defrost with side-mounted freezer without an automatic icemaker	8.51AV + 297.8	0.301av + 297.8
4–BI. Built-In Refrigerator-freezers—automatic defrost with side-mounted freezer without an automatic icemaker	10.22AV + 357.4	0.361av + 357.4
4I. Refrigerator-freezers—automatic defrost with side-mounted freezer with an automatic icemaker without through-the-door ice service	8.51AV + 381.8	0.301av + 381.8
4I–BI. Built-In Refrigerator-freezers—automatic defrost with side-mounted freezer with an automatic ice-maker without through-the-door ice service	10.22AV + 441.4	0.361av + 441.4
5. Refrigerator-freezers—automatic defrost with bottom-mounted freezer without an automatic icemaker	8.85AV + 317.0	0.312av + 317.0
5–BI. Built-In Refrigerator-freezers—automatic defrost with bottom-mounted freezer without an automatic icemaker	9.40AV + 336.9	0.332av + 336.9
5I. Refrigerator-freezers—automatic defrost with bottom-mounted freezer with an automatic icemaker without through-the-door ice service	8.85AV + 401.0	0.312av + 401.0
5I–BI. Built-In Refrigerator-freezers—automatic defrost with bottom-mounted freezer with an automatic icemaker without through-the-door ice service	9.40AV + 420.9	0.332av + 420.9
5A. Refrigerator-freezer—automatic defrost with bottom-mounted freezer with through-the-door ice service	9.25AV + 475.4	0.327av + 475.4
5A–BI. Built-in refrigerator-freezer—automatic defrost with bottom-mounted freezer with through-the-door ice service	9.83AV + 499.9	0.347av + 499.9
6. Refrigerator-freezers—automatic defrost with top-mounted freezer with through-the-door ice service	8.40AV + 385.4	0.297av + 385.4
7. Refrigerator-freezers—automatic defrost with side-mounted freezer with through-the-door ice service	8.54AV + 432.8	0.302av + 431.1
7–BI. Built-In Refrigerator-freezers—automatic defrost with side-mounted freezer with through-the-door ice service	10.25AV + 502.6	0.362av + 502.6
8. Upright freezers with manual defrost	5.57AV + 193.7	0.197av + 193.7
9. Upright freezers with automatic defrost without an automatic icemaker	8.62AV + 228.3	0.305av + 228.3
9I. Upright freezers with automatic defrost with an automatic icemaker	8.62AV + 312.3	0.305av + 312.3
9–BI. Built-In Upright freezers with automatic defrost without an automatic icemaker	9.86AV + 260.9	0.348av + 260.6
9I–BI. Built-In Upright freezers with automatic defrost with an automatic icemaker	9.86AV + 344.9	0.348av + 344.9
10. Chest freezers and all other freezers except compact freezers	7.29AV + 107.8	0.257av + 107.8
10A. Chest freezers with automatic defrost	10.24AV + 148.1	0.362av + 148.1
11. Compact refrigerators and refrigerator-freezers with manual defrost	9.03AV + 252.3	0.319av + 252.3
11A. Compact refrigerators and refrigerator-freezers with manual defrost	7.84AV + 219.1	0.277av + 219.1
12. Compact refrigerator-freezers—partial automatic defrost	5.91AV + 335.8	0.209av + 335.8
13. Compact refrigerator-freezers—automatic defrost with top-mounted freezer	11.80AV + 339.2	0.417av + 339.2
13I. Compact refrigerator-freezers—automatic defrost with top-mounted freezer with an automatic ice-maker	11.80AV + 423.2	0.417av + 423.2
13A. Compact all-refrigerator—automatic defrost	9.17AV + 259.3	0.324av + 259.3
14. Compact refrigerator-freezers—automatic defrost with side-mounted freezer	6.82AV + 456.9	0.241av + 456.9
14I. Compact refrigerator-freezers—automatic defrost with side-mounted freezer with an automatic ice-maker	6.82AV + 540.9	0.241av + 540.9
15. Compact refrigerator-freezers—automatic defrost with bottom-mounted freezer	11.80AV + 339.2	0.417av + 339.2
15I. Compact refrigerator-freezers—automatic defrost with bottom-mounted freezer with an automatic ice-maker	11.80AV + 423.2	0.417av + 423.2
16. Compact upright freezers with manual defrost	8.65AV + 225.7	0.306av + 225.7
17. Compact upright freezers with automatic defrost	10.17AV + 351.9	0.359av + 351.9
18. Compact chest freezers	9.25AV + 136.8	0.327av + 136.8

AV = Total adjusted volume, expressed in ft^3, as determined in appendices A and B to subpart B of this part.
av = Total adjusted volume, expressed in Liters.

* * * * *

(d) * * *

(1) The uniform energy factor of water heaters manufactured before May 6, 2029, shall not be less than the following:

* * * * *

(2) The uniform energy factor of water heaters manufactured on or after May 6, 2029, shall not be less than the following:

TABLE 14 TO PARAGRAPH (d)(2)

Product class	Effective storage volume and input rating (if applicable)	Draw pattern	Uniform energy factor *
Gas-fired Storage Water Heater	<20 gal	Very Small	$0.2062 - (0.0020 \times V_{eff})$
		Low	$0.4893 - (0.0027 \times V_{eff})$
		Medium	$0.5758 - (0.0023 \times V_{eff})$
		High	$0.6586 - (0.0020 \times V_{eff})$
	≥20 gal and ≤55 gal	Very Small	$0.3925 - (0.0020 \times V_{eff})$
		Low	$0.6451 - (0.0019 \times V_{eff})$
		Medium	$0.7046 - (0.0017 \times V_{eff})$
		High	$0.7424 - (0.0013 \times V_{eff})$
	>55 gal and ≤100 gal	Very Small	$0.6470 - (0.0006 \times V_{eff})$
		Low	$0.7689 - (0.0005 \times V_{eff})$
		Medium	$0.7897 - (0.0004 \times V_{eff})$
		High	$0.8072 - (0.0003 \times V_{eff})$
	>100 gal	Very Small	$0.1482 - (0.0007 \times V_{eff})$
		Low	$0.4342 - (0.0017 \times V_{eff})$
		Medium	$0.5596 - (0.0020 \times V_{eff})$
		High	$0.6658 - (0.0019 \times V_{eff})$
Oil-fired Storage Water Heater	≤50 gal	Very Small	$0.2909 - (0.0012 \times V_{eff})$
		Low	$0.5730 - (0.0016 \times V_{eff})$
		Medium	$0.6478 - (0.0016 \times V_{eff})$
		High	$0.7215 - (0.0014 \times V_{eff})$
	>50 gal	Very Small	$0.1580 - (0.0009 \times V_{eff})$
		Low	$0.4390 - (0.0020 \times V_{eff})$
		Medium	$0.5389 - (0.0021 \times V_{eff})$
		High	$0.6172 - (0.0018 \times V_{eff})$
Very Small Electric Storage Water Heater	<20 gal	Very Small	$0.5925 - (0.0059 \times V_{eff})$
		Low	$0.8642 - (0.0030 \times V_{eff})$
		Medium	$0.9096 - (0.0020 \times V_{eff})$
		High	$0.9430 - (0.0012 \times V_{eff})$
Small Electric Storage Water Heater	≥20 gal and ≤35 gal	Very Small	$0.8808 - (0.0008 \times V_{eff})$
		Low	$0.9254 - (0.0003 \times V_{eff})$
Electric Storage Water Heaters	≥20 and ≤55 gal (excluding small electric storage water heaters).	Very Small	2.30
		Low	2.30
		Medium	2.30
		High	2.30
	>55 gal and ≤120 gal	Very Small	2.50
		Low	2.50
		Medium	2.50
		High	2.50
	>120 gal	Very Small	$0.3574 - (0.0012 \times V_{eff})$
		Low	$0.7897 - (0.0019 \times V_{eff})$
		Medium	$0.8884 - (0.0017 \times V_{eff})$
		High	$0.9575 - (0.0013 \times V_{eff})$
Tabletop Water Heater	<20 gal	Very Small	$0.5925 - (0.0059 \times V_{eff})$
		Low	$0.8642 - (0.0030 \times V_{eff})$
	≥20 gal	Very Small	$0.6323 - (0.0058 \times V_{eff})$
		Low	$0.9188 - (0.0031 \times V_{eff})$
Instantaneous Oil-fired Water Heater	<2 gal and ≤210,000 Btu/h	Very Small	0.61
		Low	0.61
		Medium	0.61
		High	0.61
	≥2 gal and ≤210,000 Btu/h	Very Small	$0.2780 - (0.0022 \times V_{eff})$
		Low	$0.5151 - (0.0023 \times V_{eff})$
		Medium	$0.5687 - (0.0021 \times V_{eff})$
		High	$0.6147 - (0.0017 \times V_{eff})$
Instantaneous Electric Water Heater	<2 gal	Very Small	0.91
		Low	0.91
		Medium	0.91
		High	0.92
	≥2 gal	Very Small	$0.8086 - (0.0050 \times V_{eff})$
		Low	$0.9123 - (0.0020 \times V_{eff})$
		Medium	$0.9252 - (0.0015 \times V_{eff})$
		High	$0.9350 - (0.0011 \times V_{eff})$
Grid-Enabled Water Heater	>75 gal	Very Small	$1.0136 - (0.0028 \times V_{eff})$
		Low	$0.9984 - (0.0014 \times V_{eff})$
		Medium	$0.9853 - (0.0010 \times V_{eff})$
		High	$0.9720 - (0.0007 \times V_{eff})$

* V_{eff} is the Effective Storage Volume (in gallons), as determined pursuant to § 429.17 of this chapter.

* * * * *

PART 431—ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 12. The authority citation for part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 13. Amend § 431.96 by revising table 1 to paragraph (b) to read as follows:

§ 431.96 Uniform test method for the measurement of energy efficiency of commercial air conditioners and heat pumps.

* * * * *

(b) * * *

(2) * * *

TABLE 1 TO PARAGRAPH (b)—TEST PROCEDURES FOR COMMERCIAL AIR CONDITIONERS AND HEAT PUMPS

Equipment	Category	Cooling capacity or moisture removal capacity [1]	Energy efficiency descriptor	Use tests, conditions, and procedures in	Additional test procedure provisions as indicated in the listed paragraphs of this section
Commercial Package Air Conditioning and Heating Equipment.	Air-Cooled, 3-Phase, AC and HP.	<65,000 Btu/h	SEER and HSPF	Appendix F to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Air-Cooled, 3-Phase, AC and HP.	<65,000 Btu/h	SEER2 and HSPF2	Appendix F1 to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Air-Cooled AC and HP (excluding double-duct AC and HP).	≥65,000 Btu/h and <760,000 Btu/h.	EER, IEER, and COP	Appendix A to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Air-Cooled AC and HP (excluding double-duct AC and HP).	≥65,000 Btu/h and <760,000 Btu/h.	EER2, COP2, IVEC, and IVHE.	Appendix A1 to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Double-duct AC and HP.	≥65,000 Btu/h and <300,000 Btu/h.	EER, IEER, and COP	Appendix A to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Double-duct AC and HP.	≥65,000 Btu/h and <300,000 Btu/h.	EER2, COP2, IVEC, and IVHE.	Appendix A1 to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Water-Cooled and Evaporatively-Cooled AC.	<760,000 Btu/h	EER and IEER	Appendix A to this subpart [2].	None.
Commercial Package Air Conditioning and Heating Equipment.	Water-Cooled and Evaporatively-Cooled AC.	<760,000 Btu/h	EER2 and IVEC	Appendix A1 to this subpart [2].	None.
Water-Source Heat Pumps.	HP	<760,000 Btu/h	EER and COP	Appendix C to this subpart [2].	None.
Water-Source Heat Pumps.	HP	<760,000 Btu/h	IEER and ACOP	Appendix C1 to this subpart [2].	None.
Packaged Terminal Air Conditioners and Heat Pumps.	AC and HP	<760,000 Btu/h	EER and COP	Paragraph (g) of this section.	Paragraphs (c), (e), and (g).
Computer Room Air Conditioners.	AC	<760,000 Btu/h	SCOP	Appendix E to this subpart [2].	None.
Computer Room Air Conditioners.	AC	<760,000 Btu/h or <930,000 Btu/h [3].	NSenCOP	Appendix E1 to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems.	AC	<65,000 Btu/h (3-phase).	SEER	Appendix F to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems.	AC	<65,000 Btu/h (3-phase).	SEER2	Appendix F1 to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	HP	<65,000 Btu/h (3-phase).	SEER and HSPF	Appendix F to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	HP	<65,000 Btu/h (3-phase).	SEER2 and HSPF2	Appendix F1 to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	AC and HP	≥65,000 Btu/h and <760,000 Btu/h.	EER and COP	Appendix D to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	AC and HP	≥65,000 Btu/h and <760,000 Btu/h.	IEER and COP	Appendix D1 to this subpart [2].	None.
Variable Refrigerant Flow Multi-split Systems, Water-source.	HP	<760,000 Btu/h	EER and COP	Appendix D to this subpart [2].	None.

TABLE 1 TO PARAGRAPH (b)—TEST PROCEDURES FOR COMMERCIAL AIR CONDITIONERS AND HEAT PUMPS—Continued

Equipment	Category	Cooling capacity or moisture removal capacity [1]	Energy efficiency descriptor	Use tests, conditions, and procedures in	Additional test procedure provisions as indicated in the listed paragraphs of this section
Variable Refrigerant Flow Multi-split Systems, Water-source.	HP	<760,000 Btu/h	IEER and COP	Appendix D1 to this subpart [2].	None.
Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps.	AC and HP	<760,000 Btu/h	EER and COP	Appendix G to this subpart [2].	None.
Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps.	AC and HP	<760,000 Btu/h	EER, IEER, and COP	Appendix G1 to this subpart [2].	None.
Direct Expansion-Dedicated Outdoor Air Systems.	All	<324 lbs. of moisture removal/hr.	ISMRE2 and ISCOP2	Appendix B to this subpart.	None.

[1] Moisture removal capacity applies only to direct expansion-dedicated outdoor air systems.
[2] For equipment with multiple appendices listed in this table, consult the notes at the beginning of those appendices to determine the applicable appendix to use for testing.
[3] For upflow ducted and downflow floor-mounted computer room air conditioners, the test procedure in appendix E1 to this subpart applies to equipment with net sensible cooling capacity less than 930,000 Btu/h. For all other configurations of computer room air conditioners, the test procedure in appendix E1 to this subpart applies to equipment with net sensible cooling capacity less than 760,000 Btu/h.

* * * * *

■ 14. Amend § 431.192 by revising the headings to Table 1 and Table 2 to read as follows:

§ 431.192 Definitions.

* * * * *

Table 1 to the Definition of ''Special-Impedance Transformer''—Normal Impedance Ranges for Liquid-Immersed Transformers

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Table 2 to the Definition of ''Special-Impedance Transformer''—Normal Impedance Ranges for Dry-Type Transformers

* * * * *

■ 15. Amend appendix C1 to subpart R of part 431 by revising section 3.4.12.2 to read as follows:

Appendix C1 to Subpart R of Part 431—Uniform Test Method for the Measurement of Net Capacity and AWEF2 of Walk-In Cooler and Walk-In Freezer Refrigeration Systems

* * * * *

3. * * *

3.4 * * *

3.4.12 * * *

3.4.12.2 Calculate the AWEF2 as follows:

$$AWEF2 = \frac{\sum_{i=1}^{n} \dot{B}L \cdot n_j}{\sum_{j=1}^{n} \left[\dot{E}_{ss}(t_j) \cdot LF(t_j) + \left(\dot{E}F_{comp,off} + \dot{E}_{cu,off}(t_j)\right) \cdot \left(1 - LF(t_j)\right)\right] \cdot n_j}$$

Where:

$\dot{E}_{ss}(t_j$, in W, is the system power input for temperature t_j, calculated as described in section 7.4.2 of AHRI 1250–2020;

$\dot{E}_{cu,off}(t_j$, in W, is the condensing unit off-cycle power consumption for temperature t_j, determined as indicated in section 3.4.3.3 of this appendix; and

n_j are the hours for temperature bin j.

* * * * *

■ 16. Amend § 431.465 by revising the section heading to read as follows:

§ 431.465 Pumps energy conservation standards and their compliance dates.

* * * * *

■ 17. Amend appendix A to subpart Y of part 431 by revising sections IV.D.2 and VI.D.2. to read as follows:

Appendix A to Subpart Y of Part 431—Uniform Test Method for the Measurement of Energy Consumption of Pumps

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IV. * * *

IV.D * * *

IV.D.2 Determine the BEP flow rate as the flow rate at the operating point of maximum overall efficiency on the pump efficiency curve, as determined in accordance with section 40.6.6.3 of HI 40.6–2021, where the overall efficiency is the ratio of the pump power output divided by the driver power input, as specified in Table 40.6.2 of HI 40.6–2021, disregarding the calculations provided in section 40.6.6.2 of HI 40.6–2021.

* * * * *

VI. * * *

VI.D * * *

VI.D.2 Determine the BEP flow rate as the flow rate at the operating point of maximum overall efficiency on the pump efficiency curve, as determined in accordance with section 40.6.6.3 of HI 40.6–2021, where the overall efficiency is the ratio of the pump power output divided by the driver power input, as specified in Table 40.6.2 of HI 40.6–2021, disregarding the calculations provided in section 40.6.6.2 of HI 40.6–2021.

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