

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 431

[EERE-2017-BT-TP-0031]

RIN 1904-AE06

Energy Conservation Program: Test Procedure for Air-Cooled, Three-Phase, Small Commercial Package Air Conditioning and Heating Equipment With a Cooling Capacity of Less Than 65,000 Btu/h and Air-Cooled, Three-Phase, Variable Refrigerant Flow Air Conditioners and Heat Pumps With a Cooling Capacity of Less Than 65,000 Btu/h

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

ACTION: Notice of proposed rulemaking and request for comment.

SUMMARY: The U.S. Department of Energy (“DOE” or “the Department”) proposes to amend its test procedure for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 British thermal units (“Btu/h”) per hour and air-cooled, three-phase, variable refrigerant flow air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h to incorporate by reference the latest version of the relevant industry test standard. DOE also proposes to adopt the seasonal energy efficiency ratio 2 (“SEER2”) and heating seasonal performance factor 2 (“HSPF2”) metrics specified by that industry test standard in the DOE test procedures for the three-phase equipment that is the subject of this notice of proposed rulemaking (“NOPR”). Additionally, DOE proposes to amend certain provisions for representations and enforcement to harmonize with single-phase products.

DATES:

Meeting: DOE will hold a webinar on Monday, January 10, 2022, from 1:00 p.m. to 4:00 p.m. See section V, “Public Participation,” for webinar registration information, participant instructions, and information about the capabilities available to webinar participants.

Comments: DOE will accept comments, data, and information regarding this proposal no later than February 7, 2022. See section V, “Public Participation,” for details.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at www.regulations.gov. Follow the instructions for submitting comments. Alternatively, interested persons may

submit comments, identified by docket number EERE-2017-BT-TP-0031, by any of the following methods:

(1) *Federal eRulemaking Portal:* www.regulations.gov. Follow the instructions for submitting comments.
(2) *Email:* AirCooledACHP2017TP0031@ee.doe.gov. Include the docket number EERE-2017-BT-TP-0031 or regulatory information number (RIN) 1904-AE06 in the subject line of the message.

No telefacsimiles (faxes) will be accepted. For detailed instructions on submitting comments and additional information on the rulemaking process, see section V of this document.

Although DOE has routinely accepted public comment submissions through a variety of mechanisms, including postal mail and hand delivery/courier, the Department has found it necessary to make temporary modifications to the comment submission process in light of the ongoing COVID-19 pandemic. DOE is currently suspending receipt of public comments via postal mail and hand delivery/courier, and instead, the Department is only accepting electronic submissions at this time. If a commenter finds that this change poses an undue hardship, please contact Appliance Standards Program staff at (202) 586-1445 to discuss the need for alternative arrangements. Once the COVID-19 pandemic health emergency is resolved, DOE anticipates resuming all of its regular options for public comment submission, including postal mail and hand delivery/courier.

Docket: The docket, which includes **Federal Register** notices, public meeting attendee lists and transcripts (if a public meeting is held), comments, and other supporting documents/materials, is available for review at www.regulations.gov. All documents in the docket are listed in the www.regulations.gov index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at: www.regulations.gov/docket?D=EERE-2017-BT-TP-0031.

The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through www.regulations.gov.

FOR FURTHER INFORMATION CONTACT:

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For further information on how to submit a comment, review other public comments, and the docket, contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by email: ApplianceStandardsQuestions@ee.doe.gov.

SUPPLEMENTARY INFORMATION: DOE proposes to maintain and update previously approved incorporations by references for the following industry standards in part 431:

Air-Conditioning, Heating, and Refrigeration Institute (“AHRI”) Standard 210/240-2008, (“AHRI 210/240-2008”), “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” approved 2011 and updated by addendum 1 in June 2011 and addendum 2 in March 2012.

American National Standards Institute (“ANSI”)/AHRI Standard 1230-2010, “ANSI/AHRI 1230-2010”), “2010 Standard for Performance Rating of Variable Refrigerant Flow (VRF) Multi-split Air-Conditioning and Heat Pump Equipment,” approved 2010 and updated by addendum 1 in March 2011.

Copies of AHRI 210/240-2008 and ANSI/AHRI 1230-2010 can be obtained from the AHRI website by going to <https://www.ahrinet.org>.

DOE proposes to incorporate by reference the following industry standard into parts 429 and 431:

AHRI Standard 210/240-2023, (“AHRI 210/240-2023”), “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” approved 2020.

Copies of AHRI 210/240-2023 can be obtained from the AHRI website by going to <https://www.ahrinet.org>.

DOE proposes to amend the previously approved incorporation by reference for the following industry standard in part 431:

American National Standards Institute (“ANSI”)/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (“ASHRAE”) Standard 37-2009, “Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment,” ASHRAE approved June 24, 2009.

Copies of ANSI/ASHRAE Standard 37–2009 can be obtained from the American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036, (212) 642–4900, or online at: <https://webstore.ansi.org/>.

See section IV.M of this document for further discussion of these standards.

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I. Authority and Background

Small, large, and very large commercial package air conditioning and heating equipment are included in

the list of “covered equipment” for which DOE is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6311(1)(B)–(D)) Air-cooled, three-phase, small commercial air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h (“3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h”) ¹ and air-cooled, three-phase, variable refrigerant flow (“VRF” or “VRF multi-split systems”) air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h (“3-phase VRF with cooling capacity of less than 65,000 Btu/h”) ² are two separate categories of small commercial package air conditioning and heating equipment. DOE’s test procedures and energy conservation standards for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h are currently prescribed at title 10 of the Code of Federal Regulations (“CFR”) part 431. See 10 CFR 431.96 (test procedures) and 10 CFR 431.97 (energy conservation standards). The following sections discuss DOE’s authority to establish and amend the test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h, and relevant background information regarding DOE’s consideration of test procedures for this equipment.

A. Authority

The Energy Policy and Conservation Act, as amended (“EPCA”), ³ authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317, as codified) Title III, Part C ² of EPCA, added by Public Law 95–619, Title IV, section 441(a), established the Energy Conservation Program for Certain Industrial Equipment, which sets forth a variety of provisions designed to improve energy efficiency for certain industrial equipment, including 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, and 3-phase VRF

¹ ACUACs and ACUHPs means air-cooled commercial unitary air conditioners and heat pumps and is terminology consistent with that used for this equipment with a cooling capacity of greater than or equal to 65,000 Btu/h.

² As used in this rulemaking, the term “3-phase VRF with cooling capacity of less than 65,000 Btu/h” refers only to air-cooled equipment.

³ All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116–260 (Dec. 27, 2020).

² For editorial reasons, upon codification in the U.S. Code, Part C was redesignated Part A–1.

with cooling capacity of less than 65,000 Btu/h, the subjects of this NOPR. (42 U.S.C. 6311(1)(B))

The energy conservation program under EPCA consists essentially of four parts: (1) Testing, (2) labeling, (3) the establishment of Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA include definitions (42 U.S.C. 6311), test procedures (42 U.S.C. 6314), labeling provisions (42 U.S.C. 6315), energy efficiency standards (42 U.S.C. 6313), and the authority to require information and reports from manufacturers (42 U.S.C. 6316; 42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered equipment must use as the basis for: (1) Certifying to DOE that their equipment complies with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6316(b); 42 U.S.C. 6296), and (2) making representations about the efficiency of that equipment (42 U.S.C. 6314(d)). Similarly, DOE uses these test procedures to determine whether the equipment complies with relevant standards promulgated under EPCA.

Federal energy efficiency requirements for covered equipment established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6316(a)–(b); 42 U.S.C. 6297) However, DOE may grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions of EPCA. (42 U.S.C. 6316(b)(2)(D))

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered equipment. EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results reflecting the energy efficiency, energy use, and estimated annual operating cost of a given type of covered equipment during a representative average use cycle and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2))

As discussed, 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h are both categories of small commercial package air conditioning and heating equipment. EPCA requires that the test procedures for small commercial package air conditioning and heating equipment

shall be those generally accepted industry testing procedures or rating procedures developed or recognized by AHRI or by ASHRAE, as referenced in ASHRAE Standard 90.1, “Energy Standard for Buildings Except Low-Rise Residential Buildings” (ASHRAE Standard 90.1). (42 U.S.C. 6314(a)(4)(A)) Further, if that industry test procedure is amended, DOE must amend its test procedure to be consistent with the amended industry test procedure, unless DOE determines, by rule published in the **Federal Register** and supported by clear and convincing evidence, that such amended test procedure would not meet the requirements in 42 U.S.C. 6314(a)(2) and (3) related to representative use and test burden. (42 U.S.C. 6314(a)(4)(B)) In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6314(b))

EPCA also requires that, at least once every 7 years, DOE shall evaluate test procedures for each type of covered equipment, including those addressed in this NOPR, to determine whether amended test procedures would more accurately or fully comply with the requirement that the test procedures not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6314(a)(1)) In addition, if DOE determines that a test procedure amendment is warranted, DOE must publish the proposed test procedures in the **Federal Register**, and afford interested persons an opportunity of not less than 45 days to present oral and written data, views, and arguments on the proposed test procedures. (42 U.S.C. 6314(b)) If DOE determines that test procedure revisions are not

appropriate, DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6314(a)(1)(A)(ii))

DOE is publishing this NOPR consistent with its obligations under EPCA.

B. Background

DOE’s current test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h are codified at 10 CFR 431.96.

The Federal test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h was last amended on May 16, 2012 to incorporate by reference the ANSI/AHRI Standard 210/240–2008, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” approved by ANSI on October 27, 2011 and updated by addendum 1 in June 2011 and addendum 2 in March 2012 (“ANSI/AHRI 210/240–2008”). 77 FR 28928 (“May 2012 final rule”). The May 2012 final rule also established additional testing requirements at 10 CFR 431.96(c) and (e) that provide an optional break-in period for testing and specifications regarding the use of manufacturer instructions in set-up, respectively, applicable to measuring seasonal energy efficiency ratio (“SEER”) and heating seasonal performance factor (“HSPF”) for this equipment. 77 FR 28928, 28991 (May 16, 2012).

The Federal test procedure for 3-phase VRF with cooling capacity of less than 65,000 Btu/h was also last amended in the May 2012 final rule, and incorporated by reference ANSI/AHRI Standard 1230–2010, “2010 Standard for Performance Rating of Variable Refrigerant Flow (VRF) Multi-Split Air-Conditioning and Heat Pump Equipment,” approved August 2, 2010 and updated by addendum 1 in March

2011 (“AHRI 1230–2010”). The testing requirements at 10 CFR 431.96(c) and (e) also apply to VRF multi-split systems. Additionally, the May 2012 final rule established additional testing requirements at 10 CFR 431.96(d) and (f) that provide for refrigerant line length corrections for tests conducted using AHRI 1230–2010, and for manufacturer involvement in assessment or enforcement testing for VRF multi-split systems, respectively. 77 FR 28928, 28991 (May 16, 2012).

In 2017, AHRI published an updated version of its standard, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment” (“AHRI 210/240–2017”). That updated testing standard made a number of changes that are relevant to DOE’s current test procedure, and many of these changes were based on DOE’s current test procedure for single-phase central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h (*i.e.*, 10 CFR part 430, subpart B, appendix M, “Uniform Test Method for Measuring the Energy Consumption of Central Air Conditioners and Heat Pumps”; “Appendix M”).⁴

Following the publication of AHRI 210/240–2017, on October 2, 2018, DOE published in the **Federal Register** a request for information (“RFI”) seeking comments on whether DOE should align its test procedure (and certification and enforcement requirements) for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h with that for air-cooled, single-phase, central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h, consistent with the update to AHRI 210/240–2017. 83 FR 49501 (“October 2018 RFI”).

DOE received comments in response to the October 2018 RFI from the interested parties listed in Table I.I.

TABLE I.I.—INTERESTED PARTIES PROVIDING WRITTEN COMMENTS TO THE OCTOBER 2018 RFI

Organization(s)	Reference in this NOPR	Organization type
Air-Conditioning Heating and Refrigeration Institute	AHRI	Trade Association.
Pacific Gas and Electric Company (“PG&E”), San Diego Gas, and Electric (“SDG&E”), and Southern California Edison (“SCE”).	CA IOUs	Utilities.
Goodman Global, Inc.	Goodman	Manufacturer.
Ingersoll Rand	Ingersoll Rand	Manufacturer.
Lennox International Inc	Lennox	Manufacturer.
Natural Resources Defense Council (“NRDC”), and Appliance Standards Awareness Project (“ASAP”).	NRDC and ASAP	Energy Efficiency Advocates.
United Technologies Corporation (submitted by Carrier Corporation)	Carrier	Manufacturer.

⁴ Three-phase equipment models generally are identical physically to their single-phase,

residential counterparts, except for the electrical

systems and components designed for three-phase power input.

Throughout this document, a parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.⁵

In April 2019, AHRI published the “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment (with Addendum 1)” (“AHRI 210/240–2017 with Addendum 1”), which incorporated minor revisions to definitions, testing requirements, and efficiency calculations.

On October 23, 2019, ASHRAE released ASHRAE Standard 90.1–2019, which maintained the reference to AHRI 210/240 as the industry testing standard for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, but updated the editions referenced. ASHRAE Standard 90.1–2019 references AHRI 210/240–2017 for the period prior to January 1, 2023. For the period beginning January 1, 2023, ASHRAE Standard 90.1–2019 references AHRI 210/240–2023 (to align with ASHRAE Standard 90.1–2019 minimum efficiency levels for this equipment in terms of SEER2 and HSPF2 that take effect on January 1, 2023). ASHRAE Standard 90.1–2019 maintained the reference to AHRI 1230 as the industry testing standard for all VRF multi-split systems, including air-cooled, three-phase units with a cooling capacity of less than 65,000 Btu/h, with an update to AHRI 1230–2014 with Addendum 1.⁶

In May 2020, AHRI published AHRI 210/240–2023. The updates in AHRI 210/240–2017, AHRI 210/240–2017 with Addendum 1, and AHRI 210/240–2023 are discussed in section III.E.2 of this NOPR. DOE has reviewed the comments from the October 2018 RFI in the context of these updated industry standards.

In May 2021, AHRI published AHRI 1230–2021, which excludes from its scope air-cooled, VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h. Both AHRI 210/240–2017 with Addendum 1 and AHRI 210/240–2023 exclude from their scope only

VRF multi-split systems that have capacities greater than or equal to 65,000 Btu/h. Because AHRI 1230–2021 explicitly excludes VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h from scope, and the scope exclusion in AHRI 210/240–2023 applies only to VRF multi-split systems with a cooling capacity of 65,000 Btu/h or greater, VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h are included within the scope of AHRI 210/240–2023.

As such, DOE has tentatively determined that AHRI 210/240–2023 is now the appropriate industry test standard for 3-phase VRF with cooling capacity of less than 65,000 Btu/h. Three-phase VRF with cooling capacity of less than 65,000 Btu/h do not currently exist on the market, but DOE expects that any such equipment introduced to the market in the future would likely be identical to air-cooled, single-phase, VRF multi-split systems (except for the components designed for three-phase power input). Therefore, DOE has tentatively determined that it is appropriate to align its proposed test procedure for 3-phase VRF with cooling capacity of less than 65,000 Btu/h (AHRI 210/240–2023) with the test procedure for their single-phase counterparts (*i.e.*, 10 CFR part 430, subpart B, appendix M1; (“Appendix M1”). For these reasons, DOE is addressing the test procedures for this equipment in this NOPR.

II. Synopsis of the Notice of Proposed Rulemaking

This NOPR proposes to update the references in the Federal test procedures to the most recent version of the relevant industry test procedures as they relate to 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. Specifically, DOE proposes to update its regulations at 10 CFR 431.96, “Uniform test method for the measurement of energy efficiency of

commercial air conditioners and heat pumps,” as follows: (1) Incorporate by reference AHRI 210/240–2023 and ANSI/ASHRAE 37–2009 “Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment” (“ANSI/ASHRAE 37–2009”); and (2) establish provisions for determining SEER2 and HSPF2. The current DOE test procedures for all equipment addressed in this NOPR would be relocated to a new appendix B of subpart F to 10 CFR part 431 (“Appendix B”) without change, and the new test procedure adopting AHRI 210/240–2023 would be established in a new appendix B1 of subpart F to 10 CFR part 431 (“Appendix B1”) for determining SEER2 and HSPF2. Compliance with appendix B1 would not be required until such time as compliance is required with amended energy conservation standards that rely on SEER2 and HSPF2, should DOE adopt such standards. Compliance with appendix B (which aligns with the current Federal test procedure) would be required beginning 360 days following publication of the final rule. Prior to the date 360 days following publication of the final rule, testing would be required to be conducted either per appendix B or under 10 CFR 431.96 as it appeared in the 10 CFR parts 200–499 edition revised as of January 1, 2021.

In addition, DOE proposes to update most of its compliance and enforcement requirements for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h to be consistent with those for the consumer product counterparts (*i.e.*, air-cooled, single-phase, central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h (which include single-phase VRF multi-split systems)).

DOE’s proposed actions are summarized in Table II.2 and addressed in detail in section III of this document.

TABLE II.2—SUMMARY OF CHANGES IN PROPOSED TEST PROCEDURE RELATIVE TO CURRENT TEST PROCEDURE

Current DOE test procedures	Proposed amendment	Reason
Incorporates by reference ANSI/AHRI 210/240–2008 (for equipment other than VRF multi-split systems) and ANSI/AHRI 1230–2010 for VRF multi-split systems.	Incorporates by reference in a new appendix B1 AHRI 210/240–2023 and ANSI/ASHRAE 37–2009.	EPCA requirement to harmonize with industry test procedure.

⁵ The parenthetical reference provides a reference for information located in the docket of this rulemaking. (Docket No. EERE–2017–BT–TP–0031, which is maintained at www.regulations.gov). The references are arranged as follows: (commenter

name, comment docket ID number, page of that document).

⁶ Air-cooled, three-phase, VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h

are not excluded from the scope of either AHRI 210/240 (2017 and 2023) or AHRI 1230–2014 with Addendum 1.

TABLE II.2—SUMMARY OF CHANGES IN PROPOSED TEST PROCEDURE RELATIVE TO CURRENT TEST PROCEDURE—Continued

Current DOE test procedures	Proposed amendment	Reason
Applicable representation requirements are those specified at 10 CFR 429.43 and 10 CFR 429.70 for commercial heating, ventilating, and air conditioning (“HVAC”) equipment.	Amends representation requirements at new 10 CFR 429.64 and 10 CFR 429.70—including basic model definition, tested combination, determination of represented value, and alternative energy determination method (“AEDM”) requirements—largely consistent with requirements for single-phase consumer product counterparts. Amended representation requirements allow the use of an AEDM that is validated with testing of an otherwise identical single-phase central air conditioners and heat pumps for rating three-phase, less than 65,000 Btu/h single package units and split systems.	Harmonization with single-phase consumer product counterparts, and reduction of testing burden on manufacturers.

DOE has tentatively determined that the proposed amendments described in section III of this NOPR regarding the establishment of appendix B would not alter the measured efficiency of equipment addressed in this document or require retesting solely as a result of DOE’s adoption of this proposed amendment to the test procedure. DOE has tentatively determined, however, that the proposed test procedure amendments in appendix B1 would, if adopted, alter the measured efficiency of the affected equipment and that such amendments are consistent with the updated industry test procedure. Further, compliance with the proposed appendix B1 and the proposed amendments to the representation requirements in 10 CFR 429.43 and 10 CFR 429.70 would not be required until the compliance date of amended standards in terms of SEER2 and HSPF2. Additionally, DOE has tentatively determined that the proposed amendments, if adopted, would not increase the cost of testing relative to the updated industry test procedure. Discussion of DOE’s proposed actions are addressed in detail in section III of this NOPR.

III. Discussion

The discussion that follows details the specific changes that DOE is proposing to make to the current test procedure regulations affecting 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h.

A. Scope of Applicability

Three-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h are both categories of small commercial package air conditioning and heating equipment. Commercial package air-conditioning and heating

equipment may be air-cooled, water-cooled, evaporatively-cooled, or water source-based (not including ground water source). These equipment are electrically-operated and are designed as unitary central air conditioners or central air-conditioning heat pumps for use in commercial applications. 10 CFR 431.92. As discussed in the following sections, 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h are typically nearly identical (and therefore typically have comparable efficiency) to single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h, the latter being consumer products also subject to EPCA and for which DOE has already established energy conservation standards (10 CFR 430.32(c)) and test procedures (appendix M and appendix M1). Based on this “nearly identical” relationship, while 3-phase VRF with cooling capacity of less than 65,000 Btu/h do not currently exist on the market, DOE expects that any such equipment introduced to the market in the future would likely also be identical (except for the components designed for three-phase power input) to their single-phase counterparts, which are a subset of single-phase central air conditioners and central air conditioning heat pumps, and, as such, are also rated using appendix M and appendix M1.

Three-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h are further disaggregated into four equipment classes: Single-package air conditioners, single-package heat pumps, split-system air conditioners, and split-system heat pumps. 10 CFR 431.97(b).⁷ This NOPR

⁷ The term “single package unit” means “any central air conditioner or central air-conditioning heat pump in which all the major assemblies are enclosed in one cabinet.” The term “split system” means “any central air conditioner or central air-

proposes to amend the test procedure applicable to all four equipment classes but without amending its current scope. Three-phase VRF with cooling capacity of less than 65,000 Btu/h are further disaggregated into two equipment classes: air conditioners and heat pumps. 10 CFR 431.97(f). This NOPR proposes to amend the test procedure applicable to both equipment classes but without amending its current scope.

B. Metrics

As noted, for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h, the cooling metric and heating metric currently specified by DOE are the SEER metric and the HSPF metric, respectively. 10 CFR 431.96. SEER is a seasonal efficiency metric that accounts for electricity consumption in active and standby cooling modes during the cooling season, while HSPF is a seasonal efficiency metric that accounts for electricity consumption in active and standby heating modes for heat pumps during the heating season. These are the same metrics that currently apply to single-phase central air conditioners and central air conditioning heat pumps, including single-phase, air-cooled VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h (see appendix M).

C. Proposed Organization of the Test Procedure

DOE is proposing to relocate and centralize the current test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h to a new appendix B to subpart F of part 431. As proposed, appendix B would

conditioning heat pump in which one or more of the major assemblies are separate from the others.” 10 CFR 431.92.

not amend the current test procedures. The test procedures as provided in the proposed appendix B would continue to reference ANSI/AHRI 210/240–2008 and ANSI/AHRI 1230–2010 and provide instructions for determining SEER and HSPF. DOE is proposing to also update the existing incorporation by reference of ANSI/AHRI 210/240–2008 and ANSI/AHRI 1230–2010 at 10 CFR 431.95 to apply it to appendix B. The proposed appendix B would also centralize the additional test provisions currently applicable under 10 CFR 431.96, *i.e.*, 10 CFR 431.96(c) through (f). As proposed, the three-phase equipment addressed in this document would be required to be tested according to appendix B until such time as compliance is required with amended energy conservation standards that rely on the SEER2 and HSPF2 metrics, should DOE adopt such standards.

DOE is also proposing to amend the test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h by adopting AHRI 210/240–2023 in a new appendix B1 to subpart F of part 431. As noted, EPCA requires DOE to amend the test procedure as necessary to be consistent with the amended industry test procedure unless it determines, by rule, published in the **Federal Register** and supported by clear and convincing evidence, that to do so would not meet the statutory requirements for test procedures regarding representativeness and no undue test burden. DOE proposes to adopt the updated version of AHRI 210/240, *i.e.*, AHRI 210/240–2023, including the SEER2 and HSPF2 metrics. As proposed, the three-phase equipment addressed in this NOPR would not be required to be tested using the test procedure in proposed Appendix B1 until such time as compliance is required with amended energy conservation standards that rely on the SEER2 and HSPF2 metrics, should DOE adopt such standards.

D. Updates to the Federal Test Method for Central Air Conditioners and Heat Pumps

On June 8, 2016, DOE published a test procedure final rule amending appendix M. 81 FR 36992 (“June 2016 final rule”).⁸ DOE further amended appendix M in a final rule, published on January 5, 2017, to improve test repeatability, reduce testing burden, and improve the accuracy of field representativeness of the testing values without impacting the

measured energy consumption. 82 FR 1426 (“January 2017 final rule”).

The January 2017 final rule also included other changes to improve test repeatability, reduce testing burden, and improve the accuracy of field representativeness that would impact the results of the test procedure. DOE established a separate appendix M1 incorporating these changes and new metrics to avoid confusion with the metrics under appendix M. Appendix M1 specifies new efficiency metrics SEER2, energy efficiency ratio 2 (“EER2”), and HSPF2 that have the same definitions as their counterpart metrics in appendix M (*i.e.*, SEER, EER, and HSPF) but reflect the amendments made to the test procedure in Appendix M1, which change the measured efficiency values compared to Appendix M. (See 82 FR 1426, 1437 (Jan. 5, 2017) explaining DOE’s decision to adopt the new metrics SEER2, EER2, and HSPF2). Beginning on January 1, 2023, efficiency representations for single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h must be based on the test procedure in appendix M1. 82 FR 1426.

Both appendices M and M1 reference ANSI/AHRI 210/240–2008, sections 6.1.3.2, 6.1.3.4, 6.1.3.5 and figures D1, D2, D4, along with sections of ANSI/AHRI 1230–2010 (related to VRF multi-split systems), ANSI/ASHRAE 23.1–2010, ANSI/ASHRAE 37–2009, ANSI/ASHRAE 41.1–2013, ANSI/ASHRAE 41.2–1987 (RA 1992), ANSI/ASHRAE 41.6–2014, ANSI/ASHRAE 41.9–2011, ANSI/ASHRAE 116–2010, and ANSI/AMCA 210–2007.

Additionally, both the June 2016 final rule and January 2017 final rule adopted amendments related to the certification, compliance, and enforcement of single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h, codified in 10 CFR part 429. *See generally*, 81 FR 36992, 37049–37055 (June 8, 2016) and 82 FR 1426, 1468–1475 (Jan. 5, 2017). The amendments included revisions to the basic model definition, clarifications to definitions, and a variety of revisions related to the testing requirements for determining represented values, certification reporting requirements, and product-specific enforcement provisions. *Id.*

E. Updates to Industry Standards and Proposed Test Procedures for Three-Phase Equipment With Cooling Capacity of Less Than 65,000 Btu/h

As noted, the current DOE test procedure at 10 CFR 431.96 for 3-phase

ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h incorporates by reference ANSI/AHRI Standard 210/240–2008 with Addenda 1 and 2 (“ANSI/AHRI 210/240–2008,” but omitting section 6.5). ANSI/AHRI 210/240–2008 includes as appendix C (which is designated as normative in the industry test standard)⁹ the entirety of the text of appendix M as amended by a final rule published on October 22, 2007 (72 FR 59906). Appendix M provides the Federal test procedure for determining the efficiency of single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h, which are consumer products covered under 10 CFR part 430.

The current DOE test procedure at 10 CFR 431.96 for 3-phase VRF with cooling capacity of less than 65,000 Btu/h incorporates by reference ANSI/AHRI Standard 1230–2010 with Addendum 1 (“ANSI/AHRI 1230–2010”, omitting sections 5.1.2 and 6.6).

As noted previously in this document, AHRI has recently published several updated industry standards: AHRI 210/240–2017 (published in December 2017), AHRI 210/240–2017 with Addendum 1 (published in April 2019), and AHRI 210/240–2023 (published in May 2020). DOE has reviewed these documents in the development of this NOPR. In addition, AHRI has recently published AHRI 1230–2021 (published in May 2021).

As discussed in the following sections, DOE is proposing to incorporate by reference AHRI 210/240–2023 as the test procedure for the three-phase equipment addressed in this document. As proposed, manufacturers would not be required to rely on the amended test procedure incorporating AHRI 210/240–2023 until such time as compliance is required with amended standards in terms of the new metrics, SEER2 and HSPF2, should DOE adopt such energy conservation standards. This proposed test procedure update would align with the test procedure and metrics for central air conditioners and heat pumps specified at appendix M1. DOE is also proposing to incorporate by reference ANSI/ASHRAE 37–2009, which is referenced by AHRI 210/240–2023.

1. Harmonization With Single-Phase Products

In the October 2018 RFI, DOE stated that the three-phase equipment at issue

⁹ The inclusion of appendix M in a normative appendix means that appendix M was required to be followed when testing in accordance with ANSI/AHRI 210/240–2008.

⁸ A correction was issued on August 18, 2016, to fix editorial errors. 81 FR 55111.

is often nearly identical to their single-phase counterparts. 83 FR 49501, 49504 (Oct. 2, 2018). Specifically, three-phase models generally are manufactured on the same production lines and are physically identical to their corresponding single-phase central air conditioner and central air conditioning heat pump models except the former have three-phase electrical systems and use components, primarily motors and compressors, that are designed for three-phase power input. *Id.* Other key operational components, such as heat exchangers and fans (excluding fan motors), are typically identical for three-phase and single-phase designs of a given model family. *Id.* In addition, most manufacturers' model numbers for single-phase products and three-phase equipment are interchangeable, and three-phase and single-phase versions of the same model have the same energy efficiency ratings. *See, e.g.,* 80 FR 42614, 42622 (July 17, 2015), and 83 FR 49501, 49504 (Oct. 2, 2018).

The October 2018 RFI raised the question of whether DOE should align its test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h with the test procedure for single-phase central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h. DOE requested comments and information on the merits of referencing the current version of appendix M, or some portion thereof, for the three-phase systems at issue versus the merits of referencing the updated AHRI 210/240–2017, which reflects the updated appendix M. 83 FR 49501, 49504 (Oct. 2, 2018).

DOE notes that the October 2018 RFI did not discuss 3-phase VRF with cooling capacity of less than 65,000 Btu/h, as AHRI had not updated the scope of its industry standards for this equipment at that time. As previously noted in this document, this equipment does not currently exist on the market; however, DOE expects that any such equipment introduced to the market in the future would—for the same reasons discussed earlier—presumably be nearly identical to its single-phase counterparts, which are a subset of single-phase central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h.

In response to the October 2018 RFI, all commenters supported harmonizing the test procedures for both 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, and single-phase central air conditioners and central air conditioning heat pumps with a cooling capacity of less than

65,000 Btu/h.¹⁰ (CA IOUs, No. 2 at pp. 1–2; Ingersoll Rand, No. 3 at p. 2; AHRI, No. 4 at pp. 1–2; NRDC and ASAP, No. 5 at pp. 1–2; Lennox, No. 6 at pp. 1–2; Carrier, No. 7 at p. 1; Goodman, No. 8 at pp. 1–3) Specifically, AHRI, Lennox, Carrier, and Goodman supported harmonizing the two test procedures by referencing the industry standard. (AHRI, No. 4 at p. 2; Lennox, No. 6 at pp. 1–2; Carrier, No. 7 at p. 1; Goodman, No. 8 at p. 2) Lennox noted that EPCA requires that the test procedure for this equipment be those generally accepted industry test procedures. (Lennox, No. 6 at p. 1) Others, however, suggested that DOE harmonize the two test procedures by adopting appendix M. (CA IOUs, No. 2 at p. 2; NRDC and ASAP, No. 5 at pp. 1–2) CA IOUs suggested that DOE reference DOE's own regulatory text, and NRDC and ASAP preferred this approach to ensure consistency and transparency. (CA IOUs, No. 2 at p. 2; NRDC and ASAP, No. 5 at p. 2) Ingersoll Rand agreed that harmonization of the test procedures is advantageous and reduces burden, but did not specify which test procedure DOE should reference. (Ingersoll Rand, No. 3 at p. 2)

Beginning January 1, 2023, Appendix M1 specifies that single-phase central air conditioners and central air conditioning heat pumps must be tested according to appendix M1. The version of AHRI 210/240 available at the time of the October 2018 RFI publication, AHRI 210/240–2017, does not contain updates to account for the more recent changes contained in appendix M1. DOE noted in the October 2018 RFI that AHRI intended to address appendix M1, by revising AHRI 210/240–2017. In the October 2018 RFI, DOE requested comment on the appropriateness of testing 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h according to appendix M1. 83 FR 49501, 49504–49505 (Oct. 2, 2018).

Carrier, Goodman, and AHRI urged DOE to wait until AHRI finishes updating AHRI 210/240 to reference the version that would include both appendix M1 and appendix M. (Carrier, No. 7 at p. 2; Goodman, No. 8 at pp. 1–2; AHRI, No. 4 at p. 2) The CA IOUs supported several changes that were made as part of appendix M1, including changes to the coil-only test, new external duct static pressure ratings, and the heating load line increase for heat pump HSPF tests. (CA IOUs, No. 2 at p. 2) The CA IOUs stated that by including these changes that were made to

appendix M1, three-phase equipment should be subject to the same requirements as single-phase equipment. (*Id.*) NRDC and ASAP supported adopting appendix M1 for three-phase equipment and noted that applying appendix M1 in the future along with revised standards will maximize consistency and minimize testing burden. (NRDC and ASAP, No. 5 at p. 2) Lennox agreed with DOE that if DOE adopts the AHRI procedure, it would not conflict with appendix M or appendix M1 and would be highly unlikely to impact measured efficiency as compared to appendix M. (Lennox, No. 6 at p. 2)

DOE is proposing to align the test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h with the test procedure at appendix M1 for central air conditioners, by adopting AHRI 210/240–2023. As discussed in section III.E.2.b of this NOPR, AHRI 210/240–2023 harmonizes with the updated Federal test method for single-phase central air conditioners and central air conditioning heat pumps (*i.e.*, appendix M1).

DOE also considered whether to harmonize the current test procedures for the three-phase equipment addressed in this document with appendix M. However, the required 360-day compliance lead-time period for test procedure final rules for ASHRAE equipment specified in EPCA (42 U.S.C. 6314(d)(1)) would result in little to no time between the compliance date of the final rule for this test procedure rulemaking and January 1, 2023—when appendix M1 is required for testing central air conditioners and heat pumps (and when appendix M will no longer be used). Therefore, DOE has tentatively concluded that there would be little practical benefit to harmonizing the test procedures for the three phase-equipment addressed in this document with the current test procedures for central air conditioners and heat pumps at appendix M. Further, as described in the following sub-sections, DOE has identified errors in AHRI 210/240–2017 with Addendum 1 that DOE has tentatively determined would need to be corrected in regulatory text, if DOE adopted AHRI 210/240–2017 with Addendum 1.

In the October 2018 RFI, DOE solicited comment on any other aspect of its current test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h. 83 FR 49501, 49505 (Oct. 2, 2018). The CA IOUs and NRDC and ASAP

¹⁰ All comments are available at www.regulations.gov, in Docket No. EERE–2017–BT–TP–0031.

recommended that DOE begin developing a dynamic load-based test procedure for both three-phase and single-phase equipment for the next rulemaking cycle. (CA IOUs, No. 2 at p. 3; NRDC and ASAP, No. 5 at p. 2) These commenters noted that work on a Canadian Standards Association Express Document (“CSA EXP07”) has begun the development of a dynamic, load-based test procedure, and that DOE should start investigating a dynamic, load-based test, similar to the test procedure being developed by the CSA Group (CSA EXP07 Public Review Draft/September 2017). (CA IOUs, No. 2 at p. 3; NRDC and ASAP, No. 5 at p. 2). DOE notes that it is reviewing documents from the CSA EXP07 development process (e.g., the public review draft and the more recently published “Express Document” CSA EXP07:19) and participating in stakeholder efforts, such as the Next Generation Test Method working group (convened by the American Council for an Energy-Efficient Economy), to evaluate load-based, dynamic test methods.¹¹

2. AHRI 210/240

a. AHRI 210/240–2017 and AHRI 210/240–2017 With Addendum 1

Many of the revisions in AHRI 210/240–2017 are intended to harmonize the industry test procedure with the updated Federal test method for single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h (i.e., appendix M). AHRI 210/240–2017 does not contain the text of appendix M in a normative appendix (as is the case in Appendix C of ANSI/AHRI 210/240–2008) and instead integrates requirements consistent with appendix M throughout the standard.¹² AHRI 210/240–2017 also

includes additional updates beyond integrating the revised appendix M.¹³

AHRI 210/240–2017 with Addendum 1 includes further updates. These include: Additional and revised definitions (Section 3); new provisions regarding multi-split systems, oil recovery, and refrigerant line length correction factors (Section 5); specified tolerances and tests required for different product types provided in Table 7 and Table 8 (Section 6); specified distinctions for total, net, cooling, and heating capacity (Sections 7, 11, 12, and Appendix C) along with multiple calculation updates (Section 11); revised testing requirements for systems with a cooling expansion device in the outdoor unit (Appendix D); reduction in the nominal overall resistance (i.e., R-value) of the thermal insulation for indoor coil inlet and outlet duct connections and inclusion of provisions for sampling devices and dew-point hygrometers (Appendix E); and a new appendix that refers to forthcoming changes to the industry standard to address the test procedure in appendix M1 (Appendix K).

While DOE understands that AHRI 210/240–2017 and AHRI 210/240–2017 with Addendum 1 were intended to harmonize with the Federal test procedure for central air conditioners and heat pumps (appendix M), DOE has identified errors and substantive differences from appendix M in both industry test standards. Specifically, DOE has identified the following issues:

- In Section 11 (“Calculations”) of AHRI 210/240–2017 with Addendum 1: (1) Multiple formulas have typographical errors;¹⁴ (2) multiple formulas are inapplicable;¹⁵ and (3) the section does not include any specification for the calculation of efficiency metrics for certain equipment subtypes: Units with variable-air-volume fans; multiple-indoor blowers; and Northern triple-capacity heat pumps (this issue is also present in AHRI 210/240–2017).

- In Section 5 (“Test Requirements”), in Appendix D (“Secondary Capacity Check Requirements—Normative”), and

in Appendix E (“ANSI/ASHRAE Standard 37 Clarifications/Exceptions”) of AHRI 210/240–2017 with Addendum 1, there are multiple inconsistencies with appendix M (many of which are also present in AHRI 210/240–2017), such as the following: (1) Section 5 references the wrong table for testing tolerances for cyclic testing (i.e., references “Table 11” in Section 5.2.4 Cycle Stability Requirements, rather than Table 3b of ASHRAE Standard 116); and (2) Section D7.6.4 specifies more burdensome condition tolerances than appendix M for the “Closed Duct test” of the outdoor air enthalpy method.¹⁶

As noted, EPCA requires that the test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h be the generally accepted industry testing procedure developed or recognized by AHRI or by ASHRAE, as referenced in ASHRAE Standard 90.1. (42 U.S.C. 6314(a)(4)(A)) Further, when the industry test procedure is amended, DOE must amend its test procedure to be consistent with the amended industry test procedure, unless DOE determines, by rule published in the **Federal Register** and supported by clear and convincing evidence, that such amended test procedure would not meet the requirements in 42 U.S.C. 6314(a)(2) and (3) related to representative use and test burden. (42 U.S.C. 6314(a)(4)(B))

DOE tentatively determines that significant deviations in regulatory text would be needed to correct errors in the referenced industry test standard (e.g., correcting and adding certain formulas, correcting test tolerances for cyclic testing) if AHRI 210/240–2017 or AHRI 210/240–2017 with Addendum 1 were to be adopted in the Federal test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h. Additionally, without further deviations in the regulatory text, testing to AHRI 210/240–2017 or AHRI 210/240–2017 with Addendum 1 would still not align with appendix M, because, as discussed, there are discrepancies between the industry test standards and appendix M.

Further, as discussed, there would be minimal, if any, practical benefit from

¹¹ A dynamic load-based test method differs from the steady-state test method currently used in DOE test procedures for air conditioning and heat pump equipment. In a steady-state test method, the indoor room is maintained at a constant temperature throughout the test. In this type of test, any variable-speed or variable-position components of air conditioners and heat pumps are set in a fixed position, which is typically specified by the manufacturer. In contrast, a dynamic load-based test has the conditioning load applied to the indoor room using a load profile that approximates how the load varies for units installed in the field. In this type of test, an air conditioning system or heat pump is allowed to automatically determine and vary its control settings in response to the imposed conditioning loads, rather than relying on manufacturer-specified settings.

¹² For example, AHRI 210/240–2017 includes an updated table of required tests (Table 7), as well as provisions related to off-mode power.

¹³ For example, AHRI 210/240–2017 has stricter requirements for heat balance and charge weight tolerance than appendix M. AHRI 210/240–2017 also includes a detailed calculation section that is based on ANSI/ASHRAE 37 and ANSI/ASHRAE 116.

¹⁴ For example, in Equation 11.64 in Section 11.2.1.2 of AHRI 210/240–2017 with Addendum 1, the denominator of the second term (enclosed in braces) should read “95–82” instead of “95–8”.

¹⁵ For example, Equation 11.187 in Section 11.2.2.3 of AHRI 210/240–2017 with Addendum 1 is not applicable, given that linear interpolation is used to determine COP at intermediate compressor speed for units with a variable-speed compressor.

¹⁶ Section D7.6.4 of AHRI 210/240–2017 with Addendum 1 specifies condition tolerances for indoor and outdoor entering air dry-bulb and wet-bulb tolerances (the target temperature for each is the average value measure during the free air test (“FA”) test). For each of these temperatures, the tolerance specified in Section D7.6.4 is half the condition tolerance specified in Table 9 of appendix M (e.g., for indoor entering dry-bulb temperature, Table 9 of appendix M specifies a condition tolerance of 0.5 °F, while Section 7.6.4.1 specifies a condition tolerance of 0.25 °F).

harmonizing the test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h with the test procedure for single-phase products at appendix M, given that the applicability of appendix M for determining compliance of central air conditioners will end January 1, 2023, and it is unlikely that a compliance date for a final rule for this rulemaking, which would be 360 days after final rule publication if a final rule is issued, would precede January 1, 2023 by any significant amount of time.

For these reasons, DOE has tentatively concluded that adopting a revised test procedure (*i.e.*, referencing AHRI 210/240–2017 or AHRI 210/240–2017 with Addendum 1, along with the substantive corrections and deviations that would be required) for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h would be unduly burdensome to manufacturers. DOE considers the reasoning discussed in the paragraphs above to constitute clear and convincing evidence that adopting AHRI 210/240–2017 or AHRI 210/240–2017 with Addendum 1 would not meet the requirements specified in 42 U.S.C. 6314(a)(2).

As such, DOE proposes to maintain the current test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, which incorporates by reference ANSI/AHRI 210/240–2008, until such time as compliance with the amended test procedure referencing AHRI 210/240–2023 would be required.

Issue 1: DOE seeks comment on its proposal to maintain reference to ANSI/AHRI 210/240–2008 with Addenda 1 and 2 as the Federal test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, until such time as compliance would be required with the amended test procedure referencing AHRI 210/240–2023.

b. AHRI 210/240–2023

DOE notes that AHRI 210/240–2023 generally corrects the errors in AHRI 210/240–2017 with Addendum 1 and harmonizes with the updated Federal test method for single-phase central air conditioners and central air conditioning heat pumps with rated cooling capacities of less than 65,000 Btu/h (*i.e.*, appendix M1, effective January 1, 2023), which includes single-phase, air-cooled, VRF multi-split systems with a cooling capacity of less than 65,000 Btu/h. The industry standard updates the performance metrics to EER2, SEER2 and HSPF2. Significant changes related to the new

efficiency metrics include higher minimum external static pressure (“ESP”) requirements for conventional systems (Table 10) and changes in the building heating load line for HSPF2 (Section 11). Additional changes in AHRI 210/240–2023 to align with appendix M1 include the addition of: (1) Minimum ESP requirements in Table 10 for varieties of ducted blower systems specified in appendix M1 (*i.e.*, ceiling- and wall-mount, mobile home, and low/mid static); (2) a separate unit configuration of single stage system with a single variable-speed variable-air-volume blower or multiple indoor blowers in Table 7; and (3) the optional H4 test (*i.e.*, the full-load heating test at 5 °F ambient temperature) in Table 7. These changes apply for testing of both 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h.

In addition, AHRI 210/240–2023 reflects and is consistent with DOE’s appendix M1, which will be the required test procedure for single-phase central air conditioners and central air conditioning heat pumps with capacities of less than 65,000 Btu/h beginning January 1, 2023. No commenters suggested that the test procedure in appendix M1 would be inappropriate for the testing of three-phase equipment.

As discussed, the updates contained in AHRI 210/240–2023 provide for measuring energy efficiency using the SEER2 and HSPF2 metrics, which are the metrics adopted by ASHRAE Standard 90.1–2019 for the 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h standards beginning January 1, 2023.¹⁷ In response to this update to AHRI 210/240, DOE proposes to incorporate AHRI 210/240–2023 as the test procedure with which representations must be made beginning with the compliance date of any amended DOE standards for three-phase equipment relying on SEER2 and HSPF2 as the metrics.¹⁸

Harmonization of the test procedures would provide for more comparable

¹⁷ ASHRAE 90.1–2019 did not update the metrics for air-cooled, three-phase, variable refrigerant flow air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h. Those metrics remain SEER and HSPF in ASHRAE Standard 90.1.

¹⁸ The timing and implementation of any amended standards may be different for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and for air-cooled, three-phase variable refrigerant flow air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h, depending on DOE rulemaking related to energy conservation standards for those separate categories of equipment.

information between three-phase equipment and single-phase products. Commercial customers considering either single-phase or three-phase equipment would have ratings for both sets of equipment that are based on identical testing requirements when evaluating product options. Because AHRI 210/240–2023 aligns with appendix M1, the proposed incorporation of this industry testing procedure for the three-phase equipment at issue would produce comparable ratings between single-phase and three-phase equipment (as discussed in section III.E.1 of this NOPR). Consequently, DOE has tentatively concluded that this proposed test procedure would not be unduly burdensome to conduct.

Only certain sections of AHRI 210/240–2023 apply to the DOE test procedures for the three-phase equipment that is the subject of this NOPR. Therefore, DOE is proposing to reference AHRI 210/240–2023 in the proposed test procedure at appendix B1 except for the following sections:

- Section 6—Rating Requirements (these provisions are not related to the method of test and DOE separately addresses these topics in 10 CFR part 429);
 - Sections 6.1.8, 6.4.1, 6.4.2, 6.4.3, 6.4.4 (minimum testing and certification requirements);
 - Sections 6.2 and 6.4.6 (permit a given product to have multiple ratings of different values);
 - Section 6.5 (uncertainty allowances for testing, which are not relevant to the Federal test procedure);
- Sections 7 through 10, Appendix C, and Appendix I (these are relevant only to AHRI’s certification program);
- Appendix F: Sections F15.2 and F17 (these pertain to electrical measurements and cyclic tolerances, respectively; DOE proposes modifications as discussed in the following paragraphs);
- Appendix G (pertains to configuration of the unit under test, discussed in the following paragraphs);
- Appendix H (pertains to Off-Mode testing, which is not required by DOE for three-phase equipment).

Regarding energy measurement provisions, section 2.8 of appendix M requires that the watt-hour (*i.e.*, “W·h”, also referred to as “integrated power” or “energy”) measuring system give readings that are accurate to within ±0.5 percent. In response to the October 2018 RFI, Carrier recommended that section 2.8.a of appendix M be revised to include a lower limit (*i.e.*, “greater of 0.5 percent of reading or 0.5 watts”), stating that, without a lower limit, compliance

with this requirement at times of low power (e.g., during an OFF cycle) can be difficult for single-phase equipment and possibly unrealistic for three-phase equipment. (Carrier, No. 7 at p. 2) Section F15.2 of AHRI 210/240–2023 addresses Carrier's concern by adding a lower limit, stating that the “watt-hour measurement system shall be accurate within ± 0.5 percent or 0.5 W/h, whichever is greater”. However, Section F15.2 of AHRI 210/240–2023 specifies incorrect units of measurement and should refer to watt hours (W·h) (consistent with the first words of Section F15.2) rather than to “W/h”. Therefore, DOE proposes not to reference Section F15.2, and instead to adopt similar provisions in section 3 of appendix B1 that correct the units of measurement to W·h.

Regarding cyclic test tolerances, Section F17 of AHRI 210/240–2023 appears to incorrectly reference ASHRAE 37 Table 2b for cyclic test operating and condition tolerances. ASHRAE 37 Table 2b does not specify tolerances specific to cyclic testing. Instead, as specified in footnote 1 to Table 8 of AHRI 210/240–2023, the tolerances in ASHRAE Standard 116 Table 3b (titled “Test Tolerances for Cyclic Performance Tests”) should be used for cyclic testing. Therefore, DOE proposes not to reference Section F17, and instead to adopt similar provisions in section 4 of appendix B1 that do not reference ASHRAE 37 test tolerances.

Regarding Appendix G, currently enforcement testing of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h falls under DOE's Commercial HVAC Enforcement Policy,¹⁹ which outlines how certain features of this equipment will be treated for compliance testing. In Appendix G of AHRI 210/240–2023, AHRI included a list of components that must be present for testing (Section G1.2) and a list of features that are optional for testing (Section G2), which provides additional instruction to address certain of these features and additional details that are beyond the scope of the current Commercial HVAC Enforcement Policy. Also, there are five features²⁰ that are included in the Commercial HVAC Enforcement Policy for 3-phase ACUACs and ACUHPs with

cooling capacity of less than 65,000 Btu/h that are not included in Section G2 of AHRI 210/240–2023.

DOE has reviewed the market for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h in connection with the specific treatment of components and optional features suggested in Appendix G of AHRI 210/240–2023. DOE found that certain optional features listed in Section G2 (as well as certain features that are included in DOE's current Commercial HVAC Enforcement Policy but not included in Section G2 of AHRI 210/240–2023) are present in models of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h. However, these same features are also present in models of single-phase central air conditioners and central air conditioning heat pumps with cooling capacity of less than 65,000 Btu/h. As discussed in section III.E.1, in response to the October 2018 RFI, all commenters supported fully harmonizing the test procedures for both 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and single-phase central air conditioners and central air conditioning heat pumps with a cooling capacity of less than 65,000 Btu/h, which aligns with the proposals in this NOPR. DOE's Commercial HVAC Enforcement Policy does not apply to single-phase products and appendix M and M1 do not include any special treatment for these optional features within the test procedure. In addition, DOE has not received any waivers related to these features and DOE does not have technical justification to support differential treatment of such features for three-phase equipment as compared to single-phase products. As such, DOE has tentatively determined that any of these features present in 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h can also be tested in accordance with the proposed test procedure and that to maintain harmonization with single-phase products, it is not necessary or appropriate to adopt Appendix G of AHRI 210/240–2023 as part of DOE's test procedure. While there are currently no models on the market of 3-phase VRF with cooling capacity of less than 65,000 Btu/h, DOE expects that, if there were, the same tentative determination would apply for the same reasons. Were DOE to adopt the proposals in this NOPR, DOE would rescind the Commercial HVAC Enforcement Policy to the extent that it is applicable to 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling

capacity of less than 65,000 Btu/h. DOE notes that all models (with or without any specific feature) may be tested by DOE at any time under DOE's current authorities if such a model is distributed in commerce in the U.S.

Issue 2: DOE seeks comment on its proposal to incorporate by reference AHRI 210/240–2023 in the DOE test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. DOE also seeks comment on its proposal to require compliance with this test procedure on the compliance date of any amended energy conservation standards that DOE may decide to adopt later as part of a future rulemaking.

3. AHRI 1230

In May 2021, AHRI published AHRI 1230–2021, which excludes from its scope 3-phase VRF with cooling capacity of less than 65,000 Btu/h. As such, in this NOPR, DOE is considering revisions based on updated versions of AHRI 210/240 only, as AHRI 1230–2021 by its explicit terms is not applicable to the equipment considered in this NOPR.

As discussed, DOE is proposing to reference AHRI 210/240–2023 for testing 3-phase VRF with cooling capacity less than 65,000 Btu/h. As proposed, the current Federal test procedure for this equipment (which references ANSI/AHRI 1230–2010), would remain the required test procedure until DOE decides to adopt amended energy conservation standards for this equipment.

4. ASHRAE 37

ANSI/ASHRAE Standard 37, which provides a method of test for many categories of air conditioning and heating equipment, is referenced for testing by all versions of AHRI Standards 210/240 and 1230. Appendix E of AHRI 210/240–2023 provides additional instruction and exceptions regarding the application of the test methods specified in ANSI/ASHRAE 37–2009. ANSI/ASHRAE 37–2009 is referenced in ANSI/AHRI 1230–2010, which is currently the referenced industry test standard in the DOE test procedure for VRF multi-split systems. ANSI/ASHRAE 37–2005 is referenced by ANSI/AHRI 210/240–2008, which is currently the referenced industry test standard in the DOE test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h.

Given the use of ANSI/ASHRAE 37–2009 when testing according to AHRI 210/240–2023, DOE is proposing to

¹⁹ The enforcement policy for commercial HVAC equipment can be found at www.energy.gov/gc/downloads/commercial-equipment-testing-enforcement-policies.

²⁰ These five features are high-static indoor blower or oversized motor; desuperheaters; outdoor fan with Variable Frequency Drive (“VFD”); indoor fan with VFD; and compressor with VFD.

reference ANSI/ASHRAE 37–2009 in its test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. Specifically, in the proposed appendix B1, DOE is proposing to reference the applicable sections of ANSI/ASHRAE 37–2009—*i.e.*, all sections except sections 1, 2 and 4.²¹

F. Certification, Compliance, and Enforcement Requirements

In the October 2018 RFI, DOE also requested comment on whether the general structure and language related to its certification, compliance, and enforcement requirements for three-phase equipment in 10 CFR part 429 should mirror the structure and language of certification, compliance, and enforcement requirements for single-phase products already found in 10 CFR part 429. 83 FR 49501, 49505 (Oct. 2, 2018). DOE noted in the October 2018 RFI that AHRI 210/240–2017 included many updates to mirror these requirements, which apply to both single-phase products and three-phase equipment. *Id.*

CA IOUs, Ingersoll Rand, and NRDC and ASAP supported adopting the certification, compliance, and enforcement requirements for single-phase systems and applying them to three-phase systems. (CA IOUs, No. 2 at p. 2; Ingersoll Rand, No. 3 at p. 2; NRDC and ASAP, No. 5 at p. 2) AHRI stated that single-phase reporting requirements are significantly more onerous than what has historically been reported, and that the reporting requirements for both consumer and commercial products should be simplified. (AHRI, No. 4 at p. 2) Carrier supported harmonizing three-phase and single-phase requirements in 10 CFR part 429, stating that while the single-phase reporting requirements are significantly more onerous than what has historically been reported, aligning the reporting for the residential and commercial products is the simplest way to reduce manufacturer burden. (Carrier, No. 7 at p. 2)

After reviewing the comments, and given that AHRI has updated Standard 210/240 to include many of the requirements found in 10 CFR 429.16, DOE proposes to amend its representation requirements for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity

of less than 65,000 Btu/h by applying certain requirements currently applicable to single-phase central air conditioners and central air conditioning heat pumps (currently specified at 10 CFR 429.16 and 10 CFR 429.70(e)).²² DOE is not proposing to amend its certification reporting requirements for the three-phase equipment that is the subject of this NOPR.

DOE is proposing to amend the basic model definition and product-specific enforcement provisions for the three-phase equipment specified at 10 CFR 431.92 and 10 CFR 429.134, respectively, to align with the provisions for single-phase products.

Harmonizing the representation requirements for three-phase equipment with the representation requirements for single-phase products, as discussed, would not increase manufacturer burden as compared to industry practice under the industry certification program. Further, these proposals would not apply until such time as DOE amends the energy conservation standards for this equipment to rely on SEER2 and HSPF2. Therefore, these proposals would not impose an undue burden on manufacturers. DOE's proposals are discussed in detail in the following sub-sections.

1. Representation Requirements

As discussed, DOE is proposing to amend certain representation requirements for the three-phase equipment addressed by this NOPR, to align with their single-phase counterparts. As part of this proposal, DOE is proposing to relocate its representation and certification requirements for three-phase equipment. Specifically, DOE is proposing that the representation and certification requirements for this three-phase equipment would be included in a new section 10 CFR 429.64 and excluded from the scope of 10 CFR 429.43. DOE is also proposing to establish a new section 10 CFR 429.70(i) for alternative energy determination method (“AEDM”) requirements that would apply to the three-phase equipment addressed in this NOPR. As proposed, manufacturers would not be required to comply with the amended representation requirements, if made final, until such time that amended standards are established that would

require compliance with amended energy conservation standards that rely on SEER2 and HSPF2 (as applicable).

In particular, 10 CFR 429.43, which is applicable to commercial heating, ventilating, and air conditioning equipment, requires determination of the represented value for each basic model through either testing or by applying an AEDM, and 10 CFR 429.70(c)(2)(iv) specifies that each AEDM must be validated by testing at least two basic models. Under 10 CFR 429.16, which is applicable to central air conditioners and central air conditioning heat pumps, determination of represented values is based on each individual model or combination (rather than for each basic model), and generally requires a minimum level of testing for each basic model. For all basic models except outdoor units with no match and multi-split systems, multi-circuit systems, and multi-head mini-split systems, represented values for individual models or combinations other than those required to be tested may be determined by using an AEDM in accordance with 10 CFR 429.70(e), with no additional testing required to validate the AEDM beyond the minimum testing required by 10 CFR 429.16. For outdoor units with no match and multi-split systems, multi-circuit systems, and multi-head mini-split systems, 10 CFR 429.16 contains additional requirements for determining represented values.

Through its newly proposed provisions in 10 CFR 429.64 and 10 CFR 429.70(i), DOE would mirror the representation requirements in 10 CFR 429.16 and 10 CFR 429.70(e), except for the minimum testing requirements and certain AEDM validation requirements for each basic model of single-package unit and single-split systems. As discussed, 10 CFR 429.16 for central air conditioners and central air conditioning heat pumps generally requires testing for every basic model. For 3-phase equipment, DOE proposes in 10 CFR 429.64 to generally maintain the current approach that not all basic models of three-phase, less than 65,000 Btu/h single-package units and single split-systems must be tested. The following paragraphs describe in further detail DOE's proposal that would allow a manufacturer to use an AEDM for rating all basic models of three-phase, less than 65,000 Btu/h single-package units and single split-systems in the case that the manufacturer rates all models with AEDMs validated with testing of otherwise identical single-phase models (*i.e.*, no testing of 3-phase equipment required), and would require testing of only two basic models of 3-

²¹ DOE is proposing to exclude reference to Section 1 (“Purpose”), Section 2 (“Scope”), and Section 4 (“Classifications”) in ANSI/ASHRAE 37–2009 to avoid any potentially contradictory requirements with DOE regulations.

²² DOE notes that these single-phase requirements are consistent with a consensus recommendation made by the Central Air Conditioners and Heat Pumps Working Group of the Appliance Standards and Rulemaking Federal Advisory Committee. (See CAC/HP Term Sheet, Docket No. EERE–2014–BT–STD–0048, No. 0076, Recommendation #7.)

phase equipment in other cases (*e.g.*, manufacturers that do not rate with an AEDM validated with testing of an otherwise identical single-phase model).

DOE has initially determined that an AEDM validated pursuant to 10 CFR 429.70(e) would also be appropriate for rating basic models of three-phase, less than 65,000 Btu/h single-package units and single split-systems that have otherwise identical single-phase counterparts. Specifically, DOE understands that the vast majority of three-phase equipment with a cooling capacity of less than 65,000 Btu/h has an otherwise identical single-phase consumer product counterpart offered by the same manufacturer, thus providing comparable performance between single-phase products and three-phase equipment with a cooling capacity of less than 65,000 Btu/h. Further, DOE has tentatively concluded that any slight differences in performance between single-phase and three-phase models (*e.g.*, minor differences in compressor performance depending on the electrical phase of the compressor motor) are well understood and can be accounted for within an AEDM (*e.g.*, slightly different compressor coefficients used to model performance for single-phase vs three-phase compressors), rather than requiring testing of three-phase models. Therefore, DOE has tentatively determined that for three-phase, less than 65,000 Btu/h single-package units and single split-systems with otherwise identical single-phase counterparts, ratings developed using an AEDM validated with the testing of otherwise identical single-phase central air conditioners and heat pumps would be no less representative than ratings developed using an AEDM validated with the testing of three-phase, less than 65,000 Btu/h equipment.

As such, for three-phase, less than 65,000 Btu/h single-package units and single split-systems, DOE proposes in 10 CFR 429.70(i)(2) to permit a manufacturer to rely on an AEDM for central air conditioners and heat pumps that is validated in accordance with 10 CFR 429.70(e)(2) with testing of otherwise identical single-phase counterparts, without additional validation testing.²³ If a manufacturer offers three-phase models that do not have otherwise identical single-phase counterparts, or the manufacturer has not validated an AEDM in accordance with 10 CFR 429.70(e)(2) with testing of

the otherwise identical single-phase counterparts, the manufacturer would be required to test a single unit sample for each of two basic models to validate an AEDM, consistent with the existing requirements for all capacities of three-phase equipment. DOE expects that this case would arise only for a small number of manufacturers who do not produce otherwise identical single-phase and three-phase equipment, but instead manufacture a line of commercial three-phase equipment that includes equipment below DOE's 65,000 Btu/h capacity boundary.

In conjunction with this proposal, DOE proposes to specify in the newly proposed 10 CFR 429.70(i)(3) that "otherwise identical" means differing only in the phase of the electrical system and the phase of power input for which the motors and compressors are designed.

Issue 3: DOE seeks comment on its proposal to align the representation requirements for the three-phase equipment addressed by this NOPR with the requirements specified for single-phase products at 10 CFR 429.16 and 10 CFR 429.70(e),—but with the exception of testing requirements and certain AEDM validation requirements for single-package and single-split system models. Specifically, DOE requests comment on its proposal to permit for three-phase, less than 65,000 Btu/h single-package and single-split system basic models with otherwise identical single-phase counterparts the use of ratings based on an AEDM validated using the test results from otherwise identical central air conditioners and heat pumps, rather than requiring validation using the test results of three-phase models. DOE also requests comment on its proposed specification of the term "otherwise identical". Finally, DOE requests comment on whether the proposed AEDM requirements should include a provision to validate the correlation between single-phase and three-phase performance as determined using an AEDM.

As part of the harmonization with single-phase requirements, the proposal in 10 CFR 429.64 would require that all representations for outdoor units with no match and for multi-split systems, multi-circuit systems, and multi-head mini-split systems must be determined through testing or other specified means, rather than through an AEDM. As currently specified, 10 CFR 429.16(c)(2)–(3) do not permit AEDMs for single-phase products with these configurations; as such, there would not be any extensively validated AEDMs available for products and equipment

with these configurations. DOE is not aware of any three-phase models on the market with these configurations (*i.e.*, outdoor unit with no match or multi-split, multi-circuit, and multi-head mini-split systems); therefore, DOE tentatively concludes that this proposal would not result in increased testing burden or costs for any manufacturer. DOE may consider permitting the use of an AEDM for these three-phase equipment categories if interested parties were to demonstrate a market for this equipment and provide information on what requirements for AEDM validation should be specified.

Issue 4: DOE seeks comment on whether there are three-phase, less than 65,000 Btu/h models of outdoor units with no match or multi-split, multi-circuit, and multi-head mini-split systems on the market, and, if so, whether AEDMs should be allowed for their ratings and what requirements for AEDM validation should be specified.

DOE notes that, as part of the harmonization with single-phase requirements, the proposal in 10 CFR 429.64 would require every individual combination of single-split-system AC equipped with a single-stage or two-stage compressor distributed in commerce to be rated as a coil-only combination, with additional blower-coil representations allowed as applicable. As discussed previously in this section, the three-phase equipment category may include models that are part of a line of commercial three-phase equipment that includes equipment below DOE's 65,000 Btu/h capacity boundary (rather than models that are otherwise identical to single-phase central air conditioners). Based on review of models certified in the DOE Compliance Certification Database, DOE expects almost all of these models to be packaged units, which are not impacted by this proposal.

Issue 5: DOE seeks comment on whether there are models of three-phase single-split-system air conditioners with single-stage or two-stage compressors that are not distributed in commerce as a coil-only combination (*i.e.*, distributed in commerce only as blower-coil combination(s)).

2. Basic Model Definition

DOE proposes to amend its basic model definition for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h to align with that for single-phase central air conditioners and central air conditioning heat pumps, as this definition forms the basis for the requirements in 10 CFR 429.16.

²³ While the AEDM would not need additional validation testing, it would need to reflect the slight difference in performance between single-phase and three-phase components.

The current definition of basic model for three-phase equipment in 10 CFR 431.92 refers to “all units manufactured by one manufacturer within a single equipment class, having the same or comparably performing compressor(s), heat exchangers, and air moving system(s) that have a common “nominal” cooling capacity.” See 10 CFR 431.92(2).²⁴ The definition of “basic model” for single-phase products in 10 CFR 430.2 provides additional specifications on this same concept. See 10 CFR 430.2 (defining the term “basic model” and detailing the application of this term to different configurations of central air conditioners and central air conditioner heat pumps). For example, for split systems manufactured by outdoor unit manufacturers, a basic model includes all individual combinations having the same model of outdoor unit but with percentage variation limits on compressor, outdoor coil, and outdoor fan characteristics. See *id.*

Issue 6: DOE requests comment on its proposal to align the definition of basic model for three-phase equipment at 10 CFR 431.96 with that for single-phase products at 10 CFR 430.2.

3. Certification Reporting Requirements

DOE acknowledges that 10 CFR 429.16 currently requires more detail in filed certification reports than that required by 10 CFR 429.43. Therefore, DOE proposes to retain the requirements for certification reports (*i.e.*, the information that must be reported for each individual model or combination) currently found in 10 CFR 429.43 rather than adopting wholesale the certification report requirements for single-phase products found in 10 CFR 429.16.

In response to the October 2018 RFI, Carrier commented that the three-phase requirements should mirror the structure, language, and certification requirements for single-phase systems to minimize the manufacturer’s burden. (Carrier, No. 7 at p. 2). In general, DOE agrees with Carrier’s comments that further aligning certification reporting requirements across single-phase products and three-phase equipment could reduce overall manufacturer burden despite the additional single-phase requirements. Therefore, should interested parties provide detail as to which information required as part of the certification reports required under 10 CFR 429.16(e) would be particularly burdensome to report and not impact

DOE’s ability to conduct enforcement testing, DOE may consider changes to the reporting requirements for both single-phase products and three-phase equipment in a separate rulemaking.

In addition, DOE may consider minor revisions to the certification reporting requirements in any energy conservation standards rulemaking that DOE may conduct for this equipment.

Issue 7: DOE seeks comment on its proposal not to amend certification reporting requirements for the three-phase equipment subject to this notice to align with single-phase products at this time. DOE also requests details on whether any particular certification reporting requirements in 10 CFR 429.16(e) are particularly problematic for manufacturers (for both single-phase products and three-phase equipment) and why.

4. Product-Specific Enforcement Provisions

DOE is proposing to amend its product-specific enforcement requirements by adding provisions to a new 10 CFR 429.134(s) for the three-phase equipment addressed in this NOPR that would align with those already required at 10 CFR 429.134(k) for single-phase products. These provisions would pertain only to DOE assessment and enforcement testing and would not impact manufacturer testing. Additionally, these requirements would apply only to equipment subject to any potential standards that DOE may set in terms of SEER2 and HSPF2.

Regarding cooling capacity, DOE is proposing that the cooling capacity of each tested unit would be measured pursuant to the test procedure and that the mean of the measurement(s) would be used to determine compliance with the applicable standards.

Regarding cyclic degradation coefficients, which are a measure of efficiency loss that would occur as a result of the compressor cycling to meet a low load level in field applications, DOE is proposing to measure the cooling and/or heating cyclic degradation coefficient, C_D^c/C_D^h , respectively, by conducting the optional cyclic tests if the manufacturer certifies that they conducted the optional cyclic tests. If the manufacturer certifies that it did not conduct the optional cyclic tests, the proposal would require that the default C_D^c/C_D^h values would be used as the basis for calculating SEER or HSPF for each unit tested.

G. Test Procedure Costs

EPCA requires that the test procedures for commercial package air conditioning and heating equipment for

small commercial package air conditioning and heating equipment, which includes 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h, be generally accepted industry testing procedures or rating procedures developed or recognized by either AHRI or ASHRAE, as referenced in ASHRAE Standard 90.1. (42 U.S.C. 6314(a)(4)(A)) Further, if such an industry test procedure is amended, DOE must amend its test procedure to be consistent with the amended industry test procedure, unless DOE determines, by rule published in the **Federal Register** and supported by clear and convincing evidence, that such amended test procedure would not meet the requirements in 42 U.S.C. 6314(a)(2)–(3) related to representative use and test burden. (42 U.S.C. 6314(a)(4)(B))

In this NOPR, DOE proposes to amend the existing test procedures for three-phase, less than 65,000 Btu/h equipment by incorporating by reference, with some modification, the updated version of the applicable industry test method, AHRI 210/240–2023, including the energy efficiency metrics SEER2 and HSPF2. DOE also proposes to amend certain representation requirements to more closely align with the representation requirements for single-phase central air conditioners and heat pumps. Amendments to both the test procedures and representation requirements in this NOPR are consistent with comments from interested parties who supported aligning the Federal regulations for the three-phase equipment addressed in this document with the regulations of their single-phase consumer product counterparts.

DOE has tentatively determined that these proposed test procedures would be representative of an average use cycle and would not be unduly burdensome for manufacturers to conduct. The proposed appendix B, measuring both SEER and HSPF per ANSI/AHRI 210/240–2008, does not contain any changes from the current Federal test procedure, and therefore would not require retesting solely as a result of DOE’s adoption of this proposed amendment. The proposed test procedure in appendix B1, measuring both SEER2 and HSPF2 per AHRI 210/240–2023, would not lead to an increase in cost from appendix B testing. Specifically, DOE estimates that the cost for third-party lab testing according to the proposed appendix B1 would be \$5,500 for air conditioners and \$8,500 for heat

²⁴ The definition applicable to variable refrigerant flow systems is different in wording but similar in content. See 10 CFR 431.92(5).

pumps, consistent with the current test procedures.

As discussed in section III.F.1 of this NOPR, DOE is proposing to amend the representation requirements for certifying basic models of three-phase, less than 65,000 Btu/h equipment to harmonize with the requirements for single-phase products. For models of outdoor units with no match and multi-split, multi-circuit, and multi-head mini-split systems, this proposal may increase testing requirements for three-phase equipment compared to the existing requirements. However, DOE is not aware of any such models on the market in these categories—accordingly, DOE does not believe the proposed representation requirements will lead to an increase in testing cost for any manufacturer.

As discussed in section III.F.1 of this NOPR, DOE is proposing to amend the AEDM²⁵ requirements for certifying basic models of three-phase, less than 65,000 Btu/h single-package units and single-split systems. Because most manufacturers' models of three-phase, less than 65,000 Btu/h equipment are nearly identical to the corresponding single-phase, consumer products, DOE is proposing to allow the use of an AEDM validated using testing of otherwise identical single-phase counterparts for certifying basic models of three-phase, less than 65,000 Btu/h single package units and split systems. For manufacturers that produce both single-phase consumer products and three-phase, less than 65,000 Btu/h equipment, this proposal would reduce any burden that might result from the proposed test procedures in appendix B1 of this NOPR, because for such manufacturers all certification of three-phase, less than 65,000 Btu/h equipment could be conducted using AEDMs without resorting to the testing of three-phase, less than 65,000 Btu/h equipment.

As discussed previously throughout this NOPR, the proposed test procedure in appendix B1 would not be mandatory until such time as DOE decides whether to amend the energy conservation standards based on SEER2 and HSPF2. Given that most manufacturers of three-phase equipment that are the subject of

this NOPR are AHRI members, and DOE is referencing the prevailing industry test procedure that was established for use in AHRI's certification program (which DOE presumes will be updated to include SEER2 and HSPF2), DOE expects that manufacturers will already be testing using the test methods in AHRI 210/240–2023 by January 1, 2023—the effective date for minimum SEER2 and HSPF2 levels in ASHRAE 90.1–2019 for three-phase equipment, and also the compliance date for testing according to appendix M1 for single-phase central air conditioners. Based on this expectation, DOE also has tentatively determined that the proposed test procedure amendments would not be expected to increase the testing burden on three-phase, less than 65,000 Btu/h equipment manufacturers. Additionally, DOE has tentatively determined that the test procedure amendments, if finalized, would not require manufacturers to redesign any of the covered equipment, would not require changes to how the equipment is manufactured, and would not impact the utility of the equipment.

Issue 8: DOE requests comment on its understanding of the impact of the test procedure proposals in this NOPR, specifically DOE's tentative determination that the proposed DOE test procedure amendments, if finalized, would not increase testing burden on manufacturers, compared to current industry practice as indicated by AHRI 210/240–2023.

H. Compliance Date

EPCA prescribes that, for the equipment at issue, all representations of energy efficiency and energy use, including those made on marketing materials and product labels, must be made in accordance with an amended test procedure, beginning 360 days after publication of such a test procedure final rule in the **Federal Register**. (42 U.S.C. 6314(d)(1))

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget (“OMB”) has determined that this test procedure proposed rulemaking does not constitute a “significant regulatory action” under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (October 4, 1993). Accordingly, this action was not subject to review under the Executive order by the Office of Information and Regulatory Affairs (“OIRA”) in OMB.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (“IRFA”) for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website: www.energy.gov/gc/office-general-counsel. DOE reviewed this proposed rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003.

The following sections detail DOE's IRFA for this test procedure rulemaking.

1. Description of Reasons Why Action Is Being Considered

DOE is proposing to amend the existing DOE test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. DOE must update the Federal test procedures to be consistent with the industry update unless there is clear and convincing evidence that the industry update would not be representative of an average use cycle or would be unduly burdensome to conduct. (42 U.S.C. 6314(a)(4)(B))

2. Objective of, and Legal Basis for, Rule

EPCA requires that the test procedures for commercial package heating and cooling equipment, which includes 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h, be generally accepted industry testing procedures or rating procedures developed or recognized by either AHRI or ASHRAE, as referenced in ASHRAE Standard 90.1. (42 U.S.C. 6314(a)(4)(A)) Further, if such an industry test procedure is amended, DOE must amend its test procedure to be consistent with the amended industry test procedure, unless DOE determines, by rule published in the **Federal Register** and supported by clear and

²⁵ Manufacturers are not required to perform laboratory testing on all basic models. In accordance with 10 CFR 429.70, three-phase, less than 65,000 Btu/h manufacturers may elect to use AEDMs. An AEDM is a computer modeling or mathematical tool that predicts the performance of non-tested basic models. These computer modeling and mathematical tools, when properly developed, can provide a means to predict the energy usage or efficiency characteristics of a basic model of a given covered product or equipment and reduce the burden and cost associated with testing.

convincing evidence, that such amended test procedure would not meet the requirements in 42 U.S.C. 6314(a)(2) and (3) related to representative use and test burden. (42 U.S.C. 6314(a)(4)(B))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered equipment, including 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 614(a)(1)(A))

3. Description and Estimate of Small Entities Regulated

For manufacturers of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h, the Small Business Administration (“SBA”) has set a size threshold, which defines those entities classified as “small businesses” for the purposes of the statute. DOE used the SBA’s small business size standards to determine whether any small entities would be subject to the requirements of the rule. *See* 13 CFR part 121. The equipment covered by this proposed rule is classified under North American Industry Classification System (“NAICS”) code 333415,²⁶ “Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing.” In 13 CFR 121.201, the SBA sets a threshold of 1,250 employees or fewer for an entity to be considered as a small business for this category.

DOE reviewed the test procedures proposed in this NOPR under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE used publicly available information to identify potential small businesses that manufacture equipment covered by this rulemaking. DOE identified thirty-seven manufacturers of equipment covered by this rulemaking. Of the thirty-seven, thirty manufacturers are original equipment manufacturers (“OEM”). DOE screened out companies that do not meet the definition of a

“small business” or are foreign-owned and operated. DOE identified eight small, domestic OEMs for consideration. DOE used subscription-based business information tools to determine headcount and revenue of the small businesses.

Of those eight small OEMs, four of them are AHRI members and four are not AHRI members. Of the four non-AHRI-member small OEMs, two certify their 3-phase, less than 65,000 Btu/h equipment models in the AHRI Directory of Certified Product Performance (“AHRI Directory”).²⁷ Therefore, DOE identified two small OEMs who are not AHRI members and do not certify their covered equipment to the AHRI Directory.

4. Description and Estimate of Compliance Requirements

DOE assumed each small business would have different potential regulatory costs depending whether they are an OEM, they are a member of AHRI, and/or they currently certify equipment in the AHRI Directory. DOE understands all AHRI members and all manufacturers currently certifying in the AHRI Directory (including small businesses) will be testing their models in accordance with AHRI 210/240–2023, the industry test procedure DOE is proposing to reference, and using AHRI’s certification program, which DOE presumes will be updated to include the SEER2 and HSPF2 metrics. The proposed test procedure amendments would not add any additional testing burden to manufacturers that are or will be using the AHRI 210/240–2023 test procedure for their models of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h.

DOE estimated the range of additional potential testing costs for the two small businesses that both are not AHRI members and do not certify their equipment that is the subject of this NOPR to the AHRI Directory. These small businesses would only incur additional testing costs if these small businesses would not have otherwise been using the AHRI 210/240–2023 test procedure to test their models of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. Of these two small businesses, the first manufacturer certifies one basic model to the DOE Compliance Certification

Database and the second manufacturer certifies two basic models to the DOE Compliance Certification Database.²⁸

In this NOPR, DOE is proposing to relocate the current DOE test procedures to a new appendix B of subpart F of part 431 (“appendix B”) without change. DOE is also proposing an amended test procedure at appendix B1 to subpart F of part 431 (“appendix B1”). Specifically, DOE is proposing in appendix B1 to incorporate by reference the updated industry test standard AHRI 210/240–2023 for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h (for which the current Federal test procedure references AHRI 210–240–2008) and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h (for which the current Federal test procedure references AHRI 1230–2010). In addition, DOE is proposing to adopt the efficiency metrics, SEER2 and HSPF2, from AHRI 210/240–2023 in the test procedure at appendix B1. Finally, DOE is proposing to harmonize representation and enforcement requirements with those applicable to single-phase products.

Appendix B does not contain any changes from the current Federal test procedure, and therefore would have no cost to industry and would not require retesting solely as a result of DOE’s adoption of this proposed amendment to the test procedure, if made final. The proposed appendix B1 adopts the most recent industry test procedure, AHRI 210/240–2023. DOE estimated the cost for third-party lab testing according to the proposed appendix B1 test procedure to be \$8,500 for three-phase, less than 65,000 Btu/h heating equipment and \$5,500 for three-phase, less than 65,000 Btu/h air conditioning equipment. If manufacturers conduct physical testing to certify a basic model of the equipment that is the subject of this NOPR, two units are required to be tested per basic model. However, manufacturers are not required to perform laboratory testing on all basic models, as manufacturers may elect to use AEDMs.²⁹ An AEDM is a computer modeling or mathematical tool that predicts the performance of non-tested basic models. These computer modeling and mathematical tools, when properly developed, can provide a means to predict the energy usage or efficiency characteristics of a basic model of a given covered product or equipment

²⁶ The size standards are listed by NAICS code and industry description and are available at: www.sba.gov/document/support-table-size-standards (Last accessed on July 16, 2021).

²⁷ The AHRI Directory of Certified Product Performance is available at www.ahridirectory.org.

²⁸ DOE’s Compliance Certification Database is available at: www.regulations.doe.gov/ccms (last accessed June 24, 2021).

²⁹ In accordance with 10 CFR 429.70.

and reduce the burden and cost associated with testing.

The first of the two analyzed small businesses manufactures one basic model of three-phase equipment with a cooling capacity less than 65,000 Btu/h—the model is an air conditioner. If this manufacturer used a third-party lab to test this basic model, DOE estimates this small business would incur additional testing costs of approximately \$11,000. The annual revenue of the first small business is approximately \$82.5 million. DOE estimates testing costs to be less than 0.01 percent of annual revenue for this small business.

The second of two analyzed small businesses manufactures two basic model of three-phase equipment with a cooling capacity of less than 65,000 Btu/h—the models are air conditioners. If this manufacturer used a third-party lab to test these basic models, DOE estimates this small business would incur additional testing costs of approximately \$22,000. DOE estimates that annual revenue of this small business to be approximately \$4 million. DOE estimates testing costs to be less than 0.6 percent of annual revenue for this small manufacturer. However, DOE notes that this second small business also manufactures single-phase central air conditioners and heat pumps; therefore, this manufacturer may use an AEDM for certifying their central air conditioner and heat pump (“CAC/HP”) models. Because the proposed test procedure in appendix B1 aligns with the test procedure for CACs/HPs at appendix M1 to subpart B of 10 CFR part 430, this manufacturer could avoid testing costs and, as a lower-cost alternative, use their CAC/HP AEDM to certify performance for the equipment that is the subject of this notice and further reduce potential costs.³⁰

Issue 9: DOE requests comment on the number of small businesses DOE identified. DOE also seeks comment on the potential cost estimates for each small business identified, compared to current industry practice, as indicated in AHRI 210/240–2023.

5. Duplication, Overlap, and Conflict With Other Rules and Regulations

DOE is not aware of any rules or regulations that duplicate, overlap, or conflict with the proposed rule being considered today.

6. Significant Alternatives to the Rule

DOE proposes to reduce burden on manufacturers, including small businesses, by allowing AEDMs in lieu of physically testing all basic models. The use of an AEDM is less costly than physical testing of models of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h.

Additionally, DOE considered alternative test methods and modifications to the AHRI 210/240–2023 test procedure for three-phase, small commercial package heating and cooling equipment with a cooling capacity of less than 65,000 Btu/h. However, DOE has tentatively determined that there are no better alternatives than the existing industry test procedures, in terms of both meeting the agency’s objectives and reducing burden on manufacturers. Therefore, DOE is proposing to amend the existing DOE test procedure for this equipment through incorporation by reference of AHRI 210/240–2023.

In addition, individual manufacturers may petition for a waiver of the applicable test procedure. (See 10 CFR 431.401) Also, Section 504 of the Department of Energy Organization Act, 42 U.S.C. 7194, provides authority for the Secretary to adjust a rule issued under EPCA in order to prevent “special hardship, inequity, or unfair distribution of burdens” that may be imposed on that manufacturer as a result of such rule. Manufacturers should refer to 10 CFR part 1003 for additional details.

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. (See generally 10 CFR part 429.) The collection-of-information requirement

for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (“PRA”). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

DOE is analyzing this proposed regulation in accordance with the National Environmental Policy Act of 1969 (“NEPA”) and DOE’s NEPA implementing regulations (10 CFR part 1021). DOE’s regulations include a categorical exclusion for rulemakings interpreting or amending an existing rule or regulation that does not change the environmental effect of the rule or regulation being amended. 10 CFR part 1021, subpart D, appendix A5. DOE anticipates that this rulemaking qualifies for categorical exclusion A5 because it is an interpretive rulemaking that does not change the environmental effect of the rule and otherwise meets the requirements for application of a categorical exclusion. See 10 CFR 1021.410. DOE will complete its NEPA review before issuing the final rule.

E. Review Under Executive Order 13132

Executive Order 13132, “Federalism,” 64 FR 43255 (August 10, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR

³⁰ As discussed in section 111.G.1 of this NOPR, DOE is proposing to allow the use of a AEDM that is validated with single-phase CACs/HPs to be used for certifying 3-phase ACUACs and ACUHPs with cooling capacity less than 65,000 Btu/h.

13735. DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA (42 U.S.C. 6297(d)). No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, “Civil Justice Reform,” 61 FR 4729 (February 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met, or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (“UMRA”) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments, and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a

proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed “significant intergovernmental mandate,” and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at www.energy.gov/gc/office-general-counsel. DOE examined this proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of \$100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, “Governmental Actions and Interference with Constitutionally Protected Property Rights” 53 FR 8859 (March 18, 1988), that this proposed regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations

Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB’s guidelines were published at 67 FR 8452 (February 22, 2002), and DOE’s guidelines were published at 67 FR 62446 (October 7, 2002). Pursuant to OMB Memorandum M–19–15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf. DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, “Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,” 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any proposed significant energy action. A “significant energy action” is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

The proposed regulatory action to amend the test procedures for measuring the energy efficiency of 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; “FEAA”) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (“FTC”) concerning the impact of the commercial or industry standards on competition.

The proposed modifications to the test procedures for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and for 3-phase VRF with cooling capacity of less than 65,000 Btu/h would reference testing methods contained in certain sections of the following commercial standards: AHRI 210/240–2023 and ANSI/ASHRAE 37–2009. DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA (*i.e.*, whether it was developed in a manner that fully provides for public participation, comment, and review). DOE will consult with both the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition, prior to prescribing a final rule.

M. Description of Materials Incorporated by Reference

In this NOPR, DOE proposes to incorporate by reference the following test standard:

(1) The test standard published by AHRI, titled “2023 Standard for Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” AHRI Standard 210/240–2023. AHRI Standard 210/240–2023 is an industry-accepted test procedure for measuring the performance of air conditioning and heating equipment. AHRI Standard 210/240–2023 is available on AHRI’s website www.ahrinet.org/search-standards.aspx.

In this NOPR, DOE proposes to amend the incorporation by reference previously approved for the following test standard:

(2) The test standard published by ASHRAE, titled “Methods of Testing for

Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment,” ANSI/ASHRAE Standard 37–2009. ANSI/ASHRAE Standard 37–2009 is an industry-accepted test procedure that provides a method of test for many categories of air conditioning and heating equipment. ANSI/ASHRAE Standard 37–2009 is available on ANSI’s website at <https://webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FASHRAE+Standard+37-2009>.

(3) In this NOPR, DOE proposes to maintain and update the incorporation by reference previously approved for the following test standards: The test standard published by AHRI, titled 210/240–2008, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” approved by ANSI on October 27, 2011 and updated by addendum 1 in June 2011 and addendum 2 in March 2012. ANSI/AHRI Standard 210/240–2008 is an industry-accepted test procedure for measuring the performance of air conditioning and heating equipment. ANSI/AHRI Standard 210/240–2008 is available on AHRI’s website at www.ahrinet.org/search-standards.aspx.

(4) The test standards published by AHRI titled, ANSI/AHRI Standard 1230–2010, “2010 Standard for Performance Rating of Variable Refrigerant Flow (VRF) Multi-split Air-Conditioning and Heat Pump Equipment,” approved August 2, 2010 and updated by addendum 1 in March 2011. ANSI/AHRI Standard 1230–2010 is an industry-accepted test procedure for measuring the performance of air conditioning and heating equipment. ANSI/AHRI Standard 1230–2010 is available on AHRI’s website www.ahrinet.org/search-standards.aspx.

V. Public Participation

A. Participation in the Webinar

The time and date of the webinar are listed in the **DATES** and **ADDRESSES** sections at the beginning of this document. If no participants register for the webinar then it will be cancelled. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE’s website: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=75&action=viewlive. Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has an interest in the topics addressed in this NOPR, or who is representative of a group or class of persons that has an interest in these issues, may request an opportunity to make an oral presentation at the webinar. Such persons may submit to ApplianceStandardsQuestions@ee.doe.gov. Persons who wish to speak

should include with their request a computer file in WordPerfect, Microsoft Word, PDF, or text (ASCII) file format that briefly describes the nature of their interest in this rulemaking and the topics they wish to discuss. Such persons should also provide a daytime telephone number where they can be reached.

Persons requesting to speak should briefly describe the nature of their interest in this rulemaking and provide a telephone number for contact. DOE requests persons selected to make an oral presentation to submit an advance copy of their statements at least two weeks before the webinar. At its discretion, DOE may permit persons who cannot supply an advance copy of their statement to participate, if those persons have made advance alternative arrangements with the Building Technologies Office. As necessary, requests to give an oral presentation should ask for such alternative arrangements.

C. Conduct of the Webinar

DOE will designate a DOE official to preside at the webinar and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the webinar/public meeting. There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. After the webinar and until the end of the comment period, interested parties may submit further comments on the proceedings and any aspect of the rulemaking.

The webinar will be conducted in an informal, conference style. DOE will allow time for prepared general statements by participants and encourage all interested parties to share their views on issues affecting this rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE), before the discussion of specific topics. DOE will permit, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly. Participants should be prepared to answer questions by DOE and by other

participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this rulemaking. The official conducting the webinar/public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the above procedures that may be needed for the proper conduct of the webinar/public meeting.

A transcript of the webinar will be included in the docket, which can be viewed as described in the Docket section at the beginning of this NOPR. In addition, any person may buy a copy of the transcript from the transcribing reporter.

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule no later than the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments using any of the methods described in the **ADDRESSES** section at the beginning of this NOPR.³¹ Submitting comments via www.regulations.gov. The www.regulations.gov web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact

you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to www.regulations.gov information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (“CBI”). Comments submitted through www.regulations.gov cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through www.regulations.gov before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that www.regulations.gov provides after you have successfully uploaded your comment.

Submitting comments via email. Comments and documents submitted via email also will be posted to www.regulations.gov. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via postal mail or hand delivery/courier, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file

format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: One copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

E. Issues on Which DOE Seeks Comment

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

Issue 1: DOE seeks comment on its proposal to maintain reference to ANSI/AHRI 210/240–2008 with Addenda 1 and 2 as the Federal test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h, until such time as compliance would be required with the amended test procedure referencing AHRI 210/240–2023.

Issue 2: DOE seeks comment on its proposal to incorporate by reference AHRI 210/240–2023 in the DOE test procedure for 3-phase ACUACs and ACUHPs with cooling capacity of less than 65,000 Btu/h and 3-phase VRF with cooling capacity of less than 65,000 Btu/h. DOE also seeks comment on its proposal to require compliance with this test procedure on the compliance date of any amended energy conservation standards that DOE may

³¹ DOE has historically provided a 75-day comment period for test procedure NOPRs pursuant to the North American Free Trade Agreement, U.S.-Canada-Mexico (“NAFTA”), Dec. 17, 1992, 32 I.L.M. 289 (1993); the North American Free Trade Agreement Implementation Act, Public Law 103–182, 107 Stat. 2057 (1993) (codified as amended at 10 U.S.C.A. 2576) (1993) (“NAFTA Implementation Act”); and Executive Order 12889, “Implementation of the North American Free Trade Agreement,” 58 FR 69681 (Dec. 30, 1993). However, on July 1, 2020, the Agreement between the United States of America, the United Mexican States, and the United Canadian States (“USMCA”), Nov. 30, 2018, 134 Stat. 11 (*i.e.*, the successor to NAFTA), went into effect, and Congress's action in replacing NAFTA through the USMCA Implementation Act, 19 U.S.C. 4501 *et seq.* (2020), implies the repeal of E.O. 12889 and its 75-day comment period requirement for technical regulations. Thus, the controlling laws are EPCA and the USMCA Implementation Act. Consistent with EPCA's public comment period requirements for consumer products, the USMCA only requires a minimum comment period of 60 days. Consequently, DOE now provides a 60-day public comment period for test procedure NOPRs.

decide to adopt later as part of a future rulemaking.

Issue 3: DOE seeks comment on its proposal to align the representation requirements for the three-phase equipment addressed by this NOPR with the requirements specified for single-phase products at 10 CFR 429.16 and 10 CFR 429.70(e),—but with the exception of testing requirements and certain AEDM validation requirements for single-package and single-split system models. Specifically, DOE requests comment on its proposal to permit for three-phase, less than 65,000 Btu/h single-package and single-split system basic models with otherwise identical single-phase counterparts the use of ratings based on an AEDM validated using the test results from otherwise identical central air conditioners and heat pumps, rather than requiring validation using the test results of three-phase models. DOE also requests comment on its proposed specification of the term “otherwise identical”. Finally, DOE requests comment on whether the proposed AEDM requirements should include a provision to validate the correlation between single-phase and three-phase performance as determined using an AEDM.

Issue 4: DOE seeks comment on whether there are three-phase, less than 65,000 Btu/h models of outdoor units with no match or multi-split, multi-circuit, and multi-head mini-split systems on the market, and, if so, whether AEDMs should be allowed for their ratings and what requirements for AEDM validation should be specified.

Issue 5: DOE seeks comment on whether there are models of three-phase single-split-system air conditioners with single-stage or two-stage compressors that are not distributed in commerce as a coil-only combination (*i.e.*, distributed in commerce only as blower-coil combination(s)).

Issue 6: DOE requests comment on its proposal to align the definition of basic model for three-phase equipment at 10 CFR 431.96 with that for single-phase products at 10 CFR 430.2.

Issue 7: DOE seeks comment on its proposal not to amend certification reporting requirements for the three-phase equipment subject to this notice to align with single-phase products at this time. DOE also requests details on whether any particular certification reporting requirements in 10 CFR 429.16(e) are particularly problematic for manufacturers (for both single-phase products and three-phase equipment) and why.

Issue 8: DOE requests comment on its understanding of the impact of the test

procedure proposals in this NOPR, specifically DOE’s tentative determination that the proposed DOE test procedure amendments, if finalized, would not increase testing burden on manufacturers, compared to current industry practice as indicated by AHRI 210/240–2023.

Issue 9: DOE requests comment on the number of small businesses DOE identified. DOE also seeks comment on the potential cost estimates for each small business identified, compared to current industry practice, as indicated in AHRI 210/240–2023.

VI. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this notice of proposed rulemaking and request for comment.

List of Subjects

10 CFR Part 429

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

10 CFR Part 431

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

Signing Authority

This document of the Department of Energy was signed on November 5, 2021, by Kelly Speakes-Backman, Principal Deputy Assistant Secretary and Acting 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 November 9, 2021.

Treena V. Garrett,

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

For the reasons stated in the preamble, DOE is proposing to amend parts 429 and 431 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

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 § 429.4 by adding paragraph (c)(3) to read as follows.

§ 429.4 Materials incorporated by reference.

* * * * *

(c) * * *

(3) AHRI Standard 210/240–2023, (“AHRI 210/240–2023”), 2023 Standard for Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment, approved 2020, IBR approved for §§ 429.64 and 429.134.

* * * * *

■ 3. Amend § 429.12 by revising paragraph (b)(8) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(b) * * *

(8) The test sample size as follows:

(i) The number of units tested for the basic model, or

(ii) In the case of single-split system or single-package central air conditioners and central air conditioning heat pumps; air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h; air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h; or multi-split, multi-circuit, or multi-head mini-split systems other than the “tested combination”, the number of units tested for each individual combination or individual model, or

(iii) If an AEDM was used in lieu of testing, enter “0” (and in the case of central air conditioners and central air conditioning heat pumps, this must be indicated separately for each metric);

* * * * *

■ 4. Amend § 429.43 by:

■ a. Revising the section heading;

- b. Removing paragraphs (b)(2)(iii), (iv.) (ix) and (x);
- c. Redesignating paragraphs (b)(2)(v) through (viii), and (xi) through (xv) as paragraphs (b)(2)(iii) through (vi), and (vii) through (xi), respectively;
- d. Removing paragraphs (b)(4)(iii) through (vi); and
- e. Redesignating paragraphs (b)(4)(vii) through (xiv) as paragraphs (b)(4)(iii) through (x).

The revisions read as follows:

§ 429.43 Commercial heating, ventilating, air conditioning (HVAC) equipment (excluding air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 British thermal units per hour and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with less than 65,000 British thermal units per hour cooling capacity).

* * * * *

- 5. Add § 429.64 to read as follows:

§ 429.64 Air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 British thermal units per hour and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 British thermal units per hour.

(a) *Applicability.* (1) For air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h subject to standards in terms of seasonal energy efficiency ratio (SEER) and heating seasonal performance factor (HSPF), representations with respect to the energy use or efficiency, including compliance certifications, are subject to the requirements in § 429.43 of this title as it appeared in the 10 CFR parts 200–499 edition revised as of January 1, 2021.

(2) For air-cooled, three-phase, small commercial package air conditioning

and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h subject to standards in terms of seasonal energy efficiency ratio 2 (“SEER2”) and heating seasonal performance factor 2 (“HSPF2”) metrics, representations with respect to the energy use or efficiency, including compliance certifications, are subject to the requirements in this section. If manufacturers choose to certify compliance with any standards in terms of SEER2 and HSPF2 prior to the applicable compliance date for those standards, the requirements of this section must be followed.

(b) *Determination of Represented Value*—(1) Required represented values. Determine the represented values (including SEER2, HSPF2, cooling capacity, and heating capacity, as applicable) for the individual models/combinations (or “tested combinations”) specified in the table to this paragraph (b)(1).

Category	Equipment subcategory	Required represented values
Single-Package unit	Single-Package AC (including Space-Constrained). Single-Package HP (including Space-Constrained).	Every individual model distributed in commerce.
Outdoor Unit and Indoor Unit (Distributed in Commerce by OUM (Outdoor Unit Manufacturer)).	Single-Split-System AC with Single-Stage or Two-Stage Compressor (including Space-Constrained and Small-Duct, High Velocity Systems (SDHV)).	Every individual combination distributed in commerce must be rated as a coil-only combination. For each model of outdoor unit, this must include at least one coil-only value that is representative of the least efficient combination distributed in commerce with that particular model of outdoor unit. Additional blower-coil representations are allowed for any applicable individual combinations, if distributed in commerce.
	Single-Split-System AC with Other Than Single-Stage or Two-Stage Compressor (including Space-Constrained and SDHV).	Every individual combination distributed in commerce, including all coil-only and blower coil combinations.
	Single-Split-System HP (including Space-Constrained and SDHV).	Every individual combination distributed in commerce.
	Multi-Split, Multi-Circuit, or Multi-Head Mini-Split Split System—non-SDHV (including Space-Constrained).	For each model of outdoor unit, at a minimum, a non-ducted “tested combination.” For any model of outdoor unit also sold with models of ducted indoor units, a ducted “tested combination.” When determining represented values on or after the compliance date of any amended energy conservation standards, the ducted “tested combination” must comprise the highest static variety of ducted indoor unit distributed in commerce (<i>i.e.</i> , conventional, mid-static, or low-static). Additional representations are allowed, as described in paragraph (d)(3) of this section.
Indoor Unit Only Distributed in Commerce by ICM (Independent Coil Manufacturer).	Multi-Split, Multi-Circuit, or Multi-Head Mini-Split Split System—SDHV.	For each model of outdoor unit, an SDHV “tested combination.” Additional representations are allowed, as described in paragraph (d)(3) of this section.
	Single-Split-System Air Conditioner (including Space-Constrained and SDHV).	Every individual combination distributed in commerce.

Category	Equipment subcategory	Required represented values
	Single-Split-System Heat Pump (including Space-Constrained and SDHV). Multi-Split, Multi-Circuit, or Multi-Head Mini-Split Split System—SDHV.	For a model of indoor unit within each basic model, a SDHV “tested combination.” Additional representations are allowed, as described in section (d)(3)(ii) of this section.
Outdoor Unit with no Match		Every model of outdoor unit distributed in commerce (tested with a model of coil-only indoor unit as specified in paragraph (c)(2) of this section).

(2) Refrigerants. (i) If a model of outdoor unit (used in a single-split, multi-split, multi-circuit, multi-head mini-split, and/or outdoor unit with no match system) is distributed in commerce and approved for use with multiple refrigerants, a manufacturer must determine all represented values for that model using each refrigerant that can be used in an individual combination of the basic model (including outdoor units with no match or “tested combinations”). This requirement may apply across the listed categories in the table in paragraph (b)(1) of this section. A refrigerant is considered approved for use if it is listed on the nameplate of the outdoor unit. If any of the refrigerants approved for use is HCFC-22 or has a 95 °F midpoint saturation absolute pressure that is ± 18 percent of the 95 °F saturation absolute pressure for HCFC-22, or if there are no refrigerants designated as approved for use, a manufacturer must determine represented values (including SEER2, HSPF2, cooling capacity, and heating capacity, as applicable) for, at a minimum, an outdoor unit with no match. If a model of outdoor unit is not charged with a specified refrigerant from the point of manufacture or if the unit is shipped requiring the addition of more than two pounds of refrigerant to meet the charge required for testing per section 5.1.8 of AHRI 210/240–2023 (incorporated by reference, see § 429.4) (unless either (a) the factory charge is equal to or greater than 70% of the outdoor unit internal volume multiplied by the liquid density of refrigerant at 95 °F or (b) an A2L refrigerant is approved for use and listed in the certification report), a manufacturer must determine represented values (including SEER2, HSPF2, cooling capacity, and heating capacity, as applicable) for, at a minimum, an outdoor unit with no match.

(ii) If a model is approved for use with multiple refrigerants, a manufacturer may make multiple separate

representations for the performance of that model (all within the same individual combination or outdoor unit with no match) using the multiple approved refrigerants. In the alternative, manufacturers may certify the model (all within the same individual combination or outdoor unit with no match) with a single representation, provided that the represented value is no more efficient than its performance using the least-efficient refrigerant. A single representation made for multiple refrigerants may not include equipment in multiple categories or equipment subcategories listed in the table in paragraph (b)(1) of this section.

(3) *Limitations for represented values of individual combinations.* The following paragraph explains the limitations for represented values of individual combinations (or “tested combinations”).

(i) Multiple product classes. Models of outdoor units that are rated and distributed in individual combinations that span multiple product classes must be tested, rated, and certified pursuant to paragraph (b) of this section as compliant with the applicable standard for each product class.

(ii) Reserved.

(4) *Requirements.* All represented values under paragraph (b) of this section must be based on testing in accordance with the requirements in paragraph (c) of this section or the application of an AEDM or other methodology as allowed in paragraph (d) of this section.

(c) *Units tested*—(1) *General.* The general requirements of § 429.11 apply to air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h, and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h; and

(2) *Sampling plans and represented values.* For individual models (for single-package systems) or individual

combinations (for split-systems, including “tested combinations” for multi-split, multi-circuit, and multi-head mini-split systems) with represented values determined through testing, each individual model/combination (or “tested combination”) must have a sample of sufficient size tested in accordance with the applicable provisions of this subpart. For heat pumps (other than heating-only heat pumps), all units of the sample population must be tested in both the cooling and heating modes and the results used for determining all representations. The represented values for any individual model/combination must be assigned such that:

(i) *Off-Mode.* Any represented value of power consumption or other measure of energy consumption for which consumers would favor lower values must 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 i th sample; or,

(B) 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 $t_{.90}$ is the t statistic for a 90 percent one-tailed confidence interval with $n - 1$ degrees of freedom (from appendix A of this subpart). Round represented values of off-mode power consumption to the nearest watt.

(ii) *SEER2 and HSPF2.* Any represented value of the energy efficiency or other measure of energy consumption 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 i th sample; or,

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

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

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 percent one-tailed confidence interval with $n - 1$ degrees of freedom (from appendix A of this subpart). Round represented values of SEER2 and HSPF2 to the nearest 0.05.

(iii) *Cooling Capacity and Heating Capacity.* The represented values of cooling capacity and heating capacity must each be a self-declared value that is:

- (A) 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 i th sample; or,

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

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

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 percent one-tailed confidence interval with $n - 1$ degrees of freedom (from appendix D of this part).

(B) Rounded according to:

- (1) The nearest 100 Btu/h if cooling capacity or heating capacity is less than 20,000 Btu/h,
- (2) The nearest 200 Btu/h if cooling capacity or heating capacity is greater than or equal to 20,000 Btu/h but less than 38,000 Btu/h, and
- (3) The nearest 500 Btu/h if cooling capacity or heating capacity is greater than or equal to 38,000 Btu/h and less than 65,000 Btu/h.

(d) *Determination of represented values*—(1) *All basic models except outdoor units with no match and multi-split systems, multi-circuit systems, and multi-head mini-split systems.*

(i) For every individual model/combination within a basic model, either—

(A) A sample of sufficient size, comprised of production units or representing production units, must be tested as complete systems with the resulting represented values for the individual model/combination obtained in accordance with paragraphs (c)(1) and (2) of this section; or

(B) The represented values of the measures of energy efficiency or energy consumption through the application of an AEDM in accordance with paragraph (e) of this section and § 429.70.

(2) *Outdoor units with no match.* All models of outdoor units with no match within a basic model must be tested with a model of coil-only indoor unit meeting the requirements of section 5.1.6.2 of AHRI 210/240–2023. Models of outdoor units with no match may not be rated with an AEDM, other than to determine the represented values for models using approved refrigerants other than the one used in testing.

(3) *For multi-split systems, multi-circuit systems, and multi-head mini-split systems.* The following applies:

(i) For each non-SDHV basic model, at a minimum, a manufacturer must test the model of outdoor unit with a “tested combination” composed entirely of non-ducted indoor units. For any models of outdoor units also sold with models of ducted indoor units, a manufacturer must test a second “tested combination” composed entirely of ducted indoor units (in addition to the non-ducted combination). The ducted “tested combination” must comprise the highest static variety of ducted indoor unit distributed in commerce (*i.e.*, conventional, mid-static, or low-static).

(ii) If a manufacturer chooses to make representations of a variety of a basic model (*i.e.*, conventional, low static, or mid-static) other than a variety for which a representation is required under paragraph (b)(1) of this section the manufacturer must conduct testing of a tested combination according to the requirements in paragraphs (c)(1) and (2) of this section.

(iii) For basic models that include mixed combinations of indoor units (*i.e.*, combinations that are comprised of any two of the following varieties—non-ducted, low-static, mid-static, and conventional ducted indoor units), the represented value for the mixed combination is the mean of the represented values for the individual component combinations as determined in accordance with paragraphs (c)(1) and (2) and paragraphs (d)(3)(i) and (ii) of this section.

(iv) For each SDHV basic model distributed in commerce by an OUM, the OUM must, at a minimum, test the model of outdoor unit with a “tested

combination” composed entirely of SDHV indoor units. For each SDHV basic model distributed in commerce by an ICM, the ICM must test the model of indoor unit with a “tested combination” composed entirely of SDHV indoor units, where the outdoor unit is the least efficient model of outdoor unit with which the SDHV indoor unit will be paired. The least efficient model of outdoor unit is the model of outdoor unit in the lowest SEER2 combination as certified by the outdoor unit manufacturer. If there are multiple outdoor unit models with the same lowest SEER2 represented value, the indoor coil manufacturer may select one for testing purposes.

(v) For basic models that include SDHV and an indoor unit of another variety (*i.e.*, non-ducted, low-static, mid-static, and conventional ducted), the represented value for the mixed SDHV/other combination is the mean of the represented values for the SDHV and other tested combination as determined in accordance with paragraphs (c)(1) through (2) and paragraphs (d)(3)(i) through (ii) of this section.

(vi) All other individual combinations of models of indoor units for the same model of outdoor unit for which the manufacturer chooses to make representations must be rated as separate basic models, and the provisions of paragraphs (c)(1) through (2) and (d)(3)(i) through (v) of this section apply.

(e) *Alternative efficiency determination methods.* In lieu of testing, represented values of efficiency or consumption may be determined through the application of an AEDM pursuant to the requirements of § 429.70(i) and the provisions of this section.

(1) *Power or energy consumption.* Any represented value of the average off mode power consumption or other measure of energy consumption of an individual model/combination for which consumers would favor lower values must be greater than or equal to the output of the AEDM but no greater than the standard.

(2) *Energy efficiency.* Any represented value of the SEER2, HSPF2, or other measure of energy efficiency of an individual model/combination for which consumers would favor higher values must be less than or equal to the output of the AEDM but no less than the standard.

(3) *Cooling capacity.* The represented value of cooling capacity of an individual model/combination must be no greater than the cooling capacity output simulated by the AEDM.

(4) *Heating capacity.* The represented value of heating capacity of an individual model/combination must be no greater than the heating capacity output simulated by the AEDM.

(f) *Certification reports.* This paragraph specifies the information that must be included in a certification report.

(1) The requirements of § 429.12; and

(2) Pursuant to § 429.12(b)(13), for each individual model (for single-package systems) or individual combination (for split-systems, including outdoor units with no match and “tested combinations” for multi-split, multi-circuit, and multi-head mini-split systems), a certification report must include the following public equipment-specific information:

(i) Commercial package air conditioning equipment that is air-cooled with a cooling capacity of less than 65,000 Btu/h (3-Phase): The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/Wh)), and the rated cooling capacity in British thermal units per hour (Btu/h).

(ii) Commercial package heating equipment that is air-cooled with a cooling capacity of less than 65,000 Btu/h (3-Phase): 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)), and the rated cooling capacity in British thermal units per hour (Btu/h).

(iii) Variable refrigerant flow multi-split air conditioners that are air-cooled with rated cooling capacity of less than 65,000 Btu/h (3-Phase): The seasonal energy efficiency ratio (SEER in British thermal units per Watt-hour (Btu/Wh)) and rated cooling capacity in British thermal units per hour (Btu/h).

(iv) Variable refrigerant flow multi-split heat pumps that are air-cooled with rated cooling capacity of less than 65,000 Btu/h (3-Phase): 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)), and rated cooling capacity in British thermal units per hour (Btu/h).

(3) Pursuant to § 429.12(b)(13), for each individual model/combination (including outdoor units with no match and “tested combinations”), a certification report must include supplemental information submitted in PDF format. The equipment-specific, supplemental information must include any additional testing and testing set up instructions (e.g., charging instructions)

for the basic model; identification of all special features that were included in rating the basic model; and all other information (e.g., operational codes or component settings) necessary to operate the basic model under the required conditions specified by the relevant test procedure. A manufacturer may also include with a certification report other supplementary items in PDF format (e.g., manuals) for DOE consideration in performing testing under subpart C of this part. The equipment-specific, supplemental information must include at least the following:

(i) Air cooled commercial package air conditioning equipment with a cooling capacity of less than 65,000 Btu/h (3-phase): The nominal cooling capacity in British thermal units per hour (Btu/h); rated airflow in standard cubic feet per minute (SCFM) for each fan coil; rated static pressure in inches of water; refrigeration charging instructions (e.g., refrigerant charge, superheat and/or subcooling temperatures); frequency or control set points for variable speed components (e.g., compressors, VFDs); required dip switch/control settings for step or variable components; a statement whether the model will operate at test conditions without manufacturer programming; any additional testing instructions, if applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model.

(ii) Commercial package heating equipment that is air-cooled with a cooling capacity of less than 65,000 Btu/h (3-phase): The nominal cooling capacity in British thermal units per hour (Btu/h); rated heating capacity in British thermal units per hour (Btu/h); rated airflow in standard cubic feet per minute (SCFM) for each fan coil; rated static pressure in inches of water; refrigeration charging instructions (e.g., refrigerant charge, superheat and/or subcooling temperatures); frequency or control set points for variable speed components (e.g., compressors, VFDs); required dip switch/control settings for step or variable components; a statement whether the model will operate at test conditions without manufacturer programming; any additional testing instructions, if

applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model.

(iii) Variable refrigerant flow multi-split air conditioners that are air-cooled with a cooling capacity of less than 65,000 Btu/h (3-Phase): The nominal cooling capacity in British thermal units per hour (Btu/h); outdoor unit(s) and indoor units identified in the tested combination; components needed for heat recovery, if applicable; rated airflow in standard cubic feet per minute (SCFM) for each indoor unit; rated static pressure in inches of water; compressor frequency set points; required dip switch/control settings for step or variable components; a statement whether the model will operate at test conditions without manufacturer programming; any additional testing instructions, if applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model. Additionally, upon DOE request, the manufacturer must provide a layout of the system set-up for testing including charging instructions consistent with the installation manual.

(iv) Variable refrigerant flow multi-split heat pumps that are air-cooled with rated cooling capacity of less than 65,000 Btu/h (3-Phase): The nominal cooling capacity in British thermal units per hour (Btu/h); rated heating capacity in British thermal units per hour (Btu/h); outdoor unit(s) and indoor units identified in the tested combination; components needed for heat recovery, if applicable; rated airflow in standard cubic feet per minute (SCFM) for each indoor unit; rated static pressure in inches of water; compressor frequency set points; required dip switch/control settings for step or variable components; a statement whether the model will operate at test conditions without manufacturer programming; any additional testing instructions, if

applicable; if a variety of motors/drive kits are offered for sale as options in the basic model to account for varying installation requirements, the model number and specifications of the motor (to include efficiency, horsepower, open/closed, and number of poles) and the drive kit, including settings, associated with that specific motor that were used to determine the certified rating; and which, if any, special features were included in rating the basic model. Additionally, upon DOE request, the manufacturer must provide a layout of the system set-up for testing

including charging instructions consistent with the installation manual.

■ 6. Amend § 429.70 by:
■ a. Revising paragraph (c) introductory text;

■ b. Revising the tables in paragraphs (c)(2)(iv) and (c)(5)(vi)(B); and

■ c. Adding paragraph (i).

The revisions and addition read as follows:

§ 429.70 Alternative methods for determining energy efficiency and energy use.

* * * * *

(c) *Alternative efficiency determination method (AEDM) for*

commercial HVAC & WH products (excluding air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with less than 65,000 Btu/h cooling capacity), and commercial refrigerators, freezers, and refrigerator-freezers—

* * * * *

(2) * * *

(iv) * * *

Validation class	Minimum number of distinct models that must be tested per AEDM
(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 Greater than or Equal to 65,000 Btu/h Cooling Capacity	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.
(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.

* * * * *

(B) * * *

(5) * * *

(vi) * * *

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 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 (Excluding Air-Cooled, Three-phase with Less than 65,000 Btu/h Cooling Capacity).	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)

* * * * *

(i) *Alternate Efficiency Determination Method (AEDM) for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with less than 65,000 Btu/h cooling capacity.*

(1) *Applicability.* (i) For air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h subject to standards in terms of seasonal energy efficiency ratio (SEER) and heating seasonal performance factor (HSPF), representations with respect to the energy use or efficiency, including compliance certifications, are subject to the requirements in § 429.70(c) of this title as it appeared in the 10 CFR parts 200–499 edition revised as of January 1, 2021.

(ii) For air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and

air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h subject to standards in terms of seasonal energy efficiency ratio 2 (“SEER2”) and heating seasonal performance factor 2 (“HSPF2”) metrics, representations with respect to the energy use or efficiency, including compliance certifications, are subject to the requirements in this section. If manufacturers choose to certify compliance with any standards in terms of SEER2 and HSPF2 prior to the applicable compliance date for those standards, the requirements of this section must be followed.

(2) *Criteria an AEDM must satisfy.* A manufacturer may not apply an AEDM to an individual model/combination to determine its represented values (SEER2 and HSPF2, as applicable) pursuant to this section unless authorized pursuant to § 429.64(e) and:

(i) The AEDM is derived from a mathematical model that estimates the energy efficiency or energy consumption characteristics of the individual model or combination (SEER2 and HSPF2, as applicable) as measured by the applicable DOE test procedure; and

(ii) The manufacturer has validated the AEDM in accordance with paragraph (i)(3) of this section.

(3) *Validation of an AEDM.* For manufacturers whose models of air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h or air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h are otherwise identical to their central air conditioner and heat pump models (meaning differing only in phase of the electrical system and the phase of power input for which the motors and compressors are designed) and who have validated an AEDM for the otherwise identical central air conditioners and heat pumps under § 429.70(e)(2), no additional validation is required. For manufacturers whose models of air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h or air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h who have not validated an AEDM for otherwise identical central air conditioners and

heat pumps under § 429.70(e)(2) must, before using an AEDM, validate the AEDM's accuracy and reliability as follows:

(i) *Minimum testing.* The manufacturer must test a single unit each of two basic models in accordance with paragraph (i)(3)(iii) of this section. Using the AEDM, calculate the energy use or efficiency for each of the tested individual models/combinations within each basic model. Compare the represented value based on testing and the AEDM energy use or efficiency output according to paragraph (i)(3)(ii) of this section. The manufacturer is responsible for ensuring the accuracy and reliability of the AEDM and that their representations are appropriate and the models being distributed in commerce meet the applicable standards, regardless of the amount of testing required in this paragraph.

(ii) *Individual model/combination tolerances.* This paragraph (i)(3)(ii) provides the tolerances applicable to individual models/combinations rated using an AEDM.

(A) The predicted represented values for each individual model/combination calculated by applying the AEDM may not be more than four percent greater (for measures of efficiency) or less (for measures of consumption) than the values determined from the corresponding test of the individual model/combination.

(B) The predicted energy efficiency or consumption for each individual model/combination calculated by applying the AEDM must meet or exceed the applicable federal energy conservation standard.

(iii) *Additional test unit requirements.* (A) Each AEDM must be supported by test data obtained from physical tests of current individual models/combinations; 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 applicable DOE test procedure with which compliance is required at the time the individual models/combinations used for validation are distributed in commerce.

(4) *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 (i)(3) of this section; and

(iii) Product information and AEDM calculations for each individual model/combination to which the AEDM has been applied.

(5) *Additional AEDM requirements.* If requested by the Department, the manufacturer must:

(i) Conduct simulations before representatives of the Department to predict the performance of particular individual models/combinations;

(ii) Provide analyses of previous simulations conducted by the manufacturer; and/or

(iii) Conduct certification testing of individual models or combinations selected by the Department.

(6) *AEDM verification testing.* DOE may use the test data for a given individual model/combination generated pursuant to § 429.104 to verify the represented value determined by an AEDM as long as the following process is followed:

(i) *Selection of units.* DOE will obtain one or more units for test from retail, if 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, testing may be conducted at a manufacturer's facility upon DOE's request.

(iii) *Testing.* At no time during verification testing may the lab and the manufacturer communicate without DOE authorization. If, during test set-up or testing, the lab indicates to DOE that it needs additional information regarding a given individual model or combination 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.

(iv) *Failure to meet certified value.* If an individual model/combination tests worse than its certified value (*i.e.*, lower than the certified efficiency value or higher than the certified consumption value) by more than 5 percent, or the test results in cooling capacity that is lower than its certified cooling capacity, DOE will notify the manufacturer. DOE will provide the manufacturer with all documentation related to the test set up, test conditions, and test results for the

unit. Within the timeframe allotted by DOE, the manufacturer may present any and all claims regarding testing validity.

(v) *Tolerances.* This paragraph specifies the tolerances DOE will permit when conducting verification testing.

(A) For consumption metrics, the result from a DOE verification test must be less than or equal to 1.05 multiplied by the certified represented value.

(B) For efficiency metrics, the result from a DOE verification test must be greater than or equal to 0.95 multiplied by the certified represented value.

(vi) *Invalid represented value.* 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 represented values for the basic model are invalid. The manufacturer must conduct additional testing and re-rate and re-certify the individual models/combinations within the basic model that were rated using the AEDM based on all test data collected, including DOE's test data.

(vii) *AEDM use.* This paragraph (i)(6)(vii) specifies when a manufacturer's use of an AEDM may be restricted due to prior invalid represented values.

(A) If DOE has determined that a manufacturer made invalid represented values on individual models/combinations within two or more basic models rated using the manufacturer's AEDM within a 24-month period, the manufacturer must test the least efficient and most efficient individual model/combination within each basic model in addition to the individual model/combination specified in § 429.16(b)(2). The 24-month period begins with a DOE determination that a represented value is invalid through the process outlined in paragraphs (i)(6)(i) through (vi) of this section.

(B) If DOE has determined that a manufacturer made invalid represented values on more than four basic models rated using the manufacturer's AEDM within a 24-month period, the manufacturer may no longer use an AEDM.

(C) If a manufacturer has lost the privilege of using an AEDM, 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 basic model, a minimum of two of which must be performed by an independent,

third-party laboratory from units obtained from retail to validate the AEDM; and

(4) Obtaining DOE authorization to resume use of an AEDM.

■ 7. Section 429.134 is amended by adding paragraph (s) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(s) *Air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h.* The following provisions apply for assessment and enforcement testing of models subject to standards in terms of SEER2 and HSPF2 (as applicable).

(1) *Verification of cooling capacity.* The cooling capacity of each tested unit of the individual model (for single-package units) or individual combination (for split systems) will be measured pursuant to the test requirements of appendix B1 to subpart F of part 431. The mean of the cooling capacity measurement(s) (either the measured cooling capacity for a single unit sample or the average of the measured cooling capacities for a multiple unit sample) will be used to determine the applicable standards for purposes of compliance.

(2) *Verification of C_D value.* (i) For models other than models of outdoor units with no match, if manufacturers certify that they did not conduct the optional tests to determine the C_c and/or C_h value for an individual model (for single-package systems) or individual combination (for split systems), as applicable, the default C_c and/or C_h value will be used as the basis for calculation of SEER2 or HSPF2 for each unit tested. If manufacturers certify that they conducted the optional tests to determine the C_c and/or C_h value for an individual model (for single-package systems) or individual combination (for split systems), as applicable, the C_c and/or C_h value will be measured pursuant to the test requirements of appendix B1 to subpart F of part 431 for each unit tested and the result for each unit tested (either the tested value or the default value, as selected according to the criteria for the cyclic test in Sections 6.1.3.1 and 6.1.3.2 of AHRI 210/240–2023 (incorporated by reference, see § 429.4)) used as the basis for calculation of SEER2 or HSPF2 for that unit.

(ii) For models of outdoor units with no match, DOE will use the default C_c

and/or C_h value pursuant to appendix B1 to subpart F of part 431.

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

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

■ 9. Amend § 431.92 in the definition of *Basic model*, by:

■ a. Revising paragraphs (2) and (5); and

■ b. Adding paragraph (7).

The revisions and addition read as follows:

§ 431.92 Definitions concerning commercial air conditioners and heat pumps.

* * * * *

Basic model includes:

* * * * *

(2) *Small, large, and very large air-cooled or water-cooled commercial package air conditioning and heating equipment* (excluding *air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h* cooling capacity) means all units manufactured by one manufacturer within a single equipment class, having the same or comparably performing compressor(s), heat exchangers, and air moving system(s) that have a common “nominal” cooling capacity.

* * * * *

(5) *Variable refrigerant flow systems* (excluding *air-cooled, three-phase, variable refrigerant flow air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h*) means all units manufactured by one manufacturer within a single equipment class, having the same primary energy source (e.g., electric or gas), and which have the same or comparably performing compressor(s) that have a common “nominal” cooling capacity and the same heat rejection medium (e.g., air or water) (includes VRF water source heat pumps).

* * * * *

(7) *Air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h* means all units manufactured by one manufacturer; having the same primary energy source; and, which have

essentially identical electrical, physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency; where essentially identical electrical, physical, and functional (or hydraulic) characteristics means:

(i) For split systems manufactured by outdoor unit manufacturers (OUMs): All individual combinations having the same model of outdoor unit, which means comparably performing compressor(s) [a variation of no more than five percent in displacement rate (volume per time) as rated by the compressor manufacturer, and no more than five percent in capacity and power input for the same operating conditions as rated by the compressor manufacturer], outdoor coil(s) [no more than five percent variation in face area and total fin surface area; same fin material; same tube material], and outdoor fan(s) [no more than ten percent variation in airflow and no more than twenty percent variation in power input];

(ii) For split systems having indoor units manufactured by independent coil manufacturers (ICMs): All individual combinations having comparably performing indoor coil(s) [plus or minus one square foot face area, plus or minus one fin per inch fin density, and the same fin material, tube material, number of tube rows, tube pattern, and tube size]; and

(iii) For single-package systems: All individual models having comparably performing compressor(s) [no more than five percent variation in displacement rate (volume per time) rated by the compressor manufacturer, and no more than five percent variations in capacity and power input rated by the compressor manufacturer corresponding to the same compressor rating conditions], outdoor coil(s) and indoor coil(s) [no more than five percent variation in face area and total fin surface area; same fin material; same tube material], outdoor fan(s) [no more than ten percent variation in outdoor airflow], and indoor blower(s) [no more than ten percent variation in indoor airflow, with no more than twenty percent variation in fan motor power input];

(iv) Except that,

(A) For single-package systems and single-split systems, manufacturers may instead choose to make each individual model/combination its own basic model provided the testing and represented value requirements in 10 CFR 429.64 of this chapter are met; and

(B) For multi-split, multi-circuit, and multi-head mini-split combinations, a

basic model may not include both individual small-duct, high velocity (SDHV) combinations and non-SDHV combinations even when they include the same model of outdoor unit. The manufacturer may choose to identify specific individual combinations as additional basic models.

* * * * *

■ 10. Amend § 431.95 by:

- a. Removing paragraph (b)(1);
- b. Redesignating paragraph (b)(2) as (b)(1);
- c. Revising newly redesignated paragraph (b)(1);
- d. Adding new paragraph (b)(2);
- e. Revising paragraph (b)(6); and
- f. Revising paragraph (c)(2).

The revisions and addition read as follows:

§ 431.95 Materials incorporated by reference.

* * * * *

(b) * * *

(1) ANSI/AHRI Standard 210/240–2008, “2008 Standard for *Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment*”, approved by ANSI on October 27, 2011

and updated by addendum 1 in June 2011 and addendum 2 in March 2012 (AHRI 210/240–2008), IBR approved for § 431.96 and appendix B to this subpart.

(2) AHRI Standard 210/240–2023, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment,” approved May 2020 (AHRI 210/240–2023), IBR approved for appendix B1 to this subpart.

* * * * *

(6) ANSI/AHRI Standard 1230–2010, “2010 Standard for *Performance Rating of Variable Refrigerant Flow (VRF) Multi-split Air-Conditioning and Heat Pump Equipment*,” approved August 2, 2010 and updated by addendum 1 in March 2011 (AHRI 1230–2010), IBR approved for § 431.96 and appendix B to this subpart.

(c) * * *

(2) ANSI/ASHRAE Standard 37–2009, (“ANSI/ASHRAE 37–2009”), “Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment,” ASHRAE approved June 24, 2009, IBR approved for § 431.96 and appendices A and B1 to this subpart.

* * * * *

■ 11. Amend § 431.96 by revising paragraph (b)(1) and Table 1 to paragraph (b)(2), to read as follows:

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

* * * * *

(b) *Testing and calculations.* (1) Determine the energy efficiency of each type of covered equipment by conducting the test procedure(s) listed in table 1 to this section along with any additional testing provisions set forth in paragraphs (c) through (g) of this section and appendices A, B, and B1 to this subpart, that apply to the energy efficiency descriptor for that equipment, category, and cooling capacity. The omitted sections of the test procedures listed in table 1 to this section must not be used. For equipment with multiple appendices listed in table 1, consult the notes at the beginning of those appendices to determine the applicable appendix to use for testing.

(2) * * *

TABLE 1 TO § 431.96—TEST PROCEDURES FOR COMMERCIAL AIR CONDITIONERS AND HEAT PUMPS

Equipment type	Category	Cooling capacity	Energy efficiency descriptor	Use tests, conditions, and procedures in ¹	Additional test procedure provisions as indicated in the listed paragraphs of this section
Small Commercial Package Air-Conditioning and Heating Equipment.	Air-Cooled, 3-Phase, AC and HP.	<65,000 Btu/h	SEER and HSPF	Appendix B to this subpart ² .	None.
	Air-Cooled AC and HP.	≥65,000 Btu/h and <135,000 Btu/h.	SEER2 and HSPF2.	Appendix B1 to this subpart ² .	None.
	Water-Cooled and Evaporatively-Cooled AC.	<65,000 Btu/h	EER, IEER, and COP.	Appendix A to this subpart.	None.
		≥65,000 Btu/h and <135,000 Btu/h.	EER	AHRI 210/240–2008 (omit section 6.5).	Paragraphs (c) and (e).
Large Commercial Package Air-Conditioning and Heating Equipment.				AHRI 340/360–2007 (omit section 6.3).	Paragraphs (c) and (e).
	Water-Source HP	<135,000 Btu/h	EER and COP	ISO Standard 13256–1 (1998).	Paragraph (e).
	Air-Cooled AC and HP.	≥135,000 Btu/h and <240,000 Btu/h.	EER, IEER and COP.	Appendix A to this subpart.	None.
	Water-Cooled and Evaporatively-Cooled AC.	≥135,000 Btu/h and <240,000 Btu/h.	EER	AHRI 340/360–2007 (omit section 6.3).	Paragraphs (c) and (e).
Very Large Commercial Package Air-Conditioning and Heating Equipment.	Air-Cooled AC and HP.	≥240,000 Btu/h and <760,000 Btu/h.	EER, IEER and COP.	Appendix A to this subpart.	None.
	Water-Cooled and Evaporatively-Cooled AC.	≥240,000 Btu/h and <760,000 Btu/h.	EER	AHRI 340/360–2007 (omit section 6.3).	Paragraphs (c) and (e).
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	<65,000 Btu/h	SCOP	ASHRAE 127–2007 (omit section 5.11).	Paragraphs (c) and (e).

TABLE 1 TO § 431.96—TEST PROCEDURES FOR COMMERCIAL AIR CONDITIONERS AND HEAT PUMPS—Continued

Equipment type	Category	Cooling capacity	Energy efficiency descriptor	Use tests, conditions, and procedures in ¹	Additional test procedure provisions as indicated in the listed paragraphs of this section
Variable Refrigerant Flow Multi-split Systems.	AC	≥65,000 Btu/h and <760,000 Btu/h. <65,000 Btu/h (3-phase).	SCOP SEER SEER2 EER	ASHRAE 127–2007 (omit section 5.11). Appendix B to this subpart ² . Appendix B1 to this subpart ² . AHRI 1230–2010 (omit sections 5.1.2 and 6.6).	Paragraphs (c) and (e). None. None. Paragraphs (c), (d), (e), and (f).
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	HP	≥65,000 Btu/h and <760,000 Btu/h. <65,000 Btu/h (3-phase).	SEER and HSPF SEER2 and HSPF2. EER and COP	Appendix B to this subpart ² . Appendix B1 to this subpart ² . AHRI 1230–2010 (omit sections 5.1.2 and 6.6).	None. None. Paragraphs (c), (d), (e), and (f).
Variable Refrigerant Flow Multi-split Systems, Water-source.	HP	≥65,000 Btu/h and <760,000 Btu/h. <760,000 Btu/h	EER and COP	AHRI 1230–2010 (omit sections 5.1.2 and 6.6).	Paragraphs (c), (d), (e), and (f).
Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps.	AC and HP	<760,000 Btu/h	EER and COP	AHRI 390–2003 (omit section 6.4).	Paragraphs (c) and (e).

¹ Incorporated by reference, as applicable; see § 431.95.

² For equipment with multiple appendices listed in Table 1, consult the notes at the beginning of those appendices to determine the applicable appendix to use for testing.

* * * * *

■ 12. Add appendix B to subpart F of part 431 to read as follows:

Appendix B to Subpart F of Part 431—Uniform Test Method for the Measurement of Energy Consumption of Air-Cooled, Three-Phase, Small Commercial Package Air Conditioning and Heating Equipment With a Cooling Capacity of Less Than 65,000 Btu/h and Air-Cooled, Three-Phase, Variable Refrigerant Flow Multi-Split Air Conditioners and Heat Pumps With a Cooling Capacity of Less Than 65,000 BTU/h

Note: Manufacturers must use the results of testing under this appendix to determine compliance with the relevant standard from § 431.97 as that standard appeared in the January 1, 2021 edition of 10 CFR parts 200–499. Specifically, before [Date 360 days following publication of the final rule] representations must be based upon results generated either under this appendix or under 10 CFR 431.96 as it appeared in the 10 CFR parts 200–499 edition revised as of January 1, 2021.

Note: For any amended standards for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h that rely

on SEER2 and HSPF2 published after January 1, 2021, manufacturers must use the results of testing under appendix B1 to determine compliance.

Representations related to energy consumption must be made in accordance with the appropriate appendix that applies (*i.e.*, appendices B or B1) when determining compliance with the relevant standard. Manufacturers may also use appendix B1 to certify compliance with any amended standards prior to the applicable compliance date for those standards.

1. Incorporation by Reference

DOE incorporated by reference in § 431.95, the entire standard for ANSI/AHRI 210/240–2008, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment”; and ANSI/AHRI 1230–2010, “Performance Rating of Variable Refrigerant Flow (VRF) Multi-split Air-conditioning and Heat Pump Equipment.” However, certain enumerated provisions of those standards, as set forth in paragraphs (a) and (b) of this section, are inapplicable. To the extent there is a conflict between the terms or provisions of a referenced industry standard and the CFR, the CFR provisions control.

(a) ANSI/AHRI 210/240–2008:

(i) Section 6.5 is inapplicable as specified in section 2.1 of this appendix.

(ii) Reserved.

(b) ANSI/AHRI 1230–2010:

(i) Section 5.1.2—*Manufacturer involvement* is inapplicable as specified in section 2.2(1) of this appendix.

(ii) Section 6.6—*Verification testing and uncertainty* is inapplicable as specified in section 2.2(2) of this appendix.

2. General

2.1 Air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h. Determine the seasonal energy efficiency ratio (SEER) and heating seasonal performance factor (HSPF) (as applicable) in accordance with ANSI/AHRI 210/240–2008; however, Section 6.5, *Tolerances*, of ANSI/AHRI 210/240–2008 is not applicable. Sections 3 and 4 of this appendix provide additional instructions for determining SEER and HSPF. In cases where there is a conflict, the language of this appendix takes precedence over ANSI/AHRI 210/240–2008.

1.2. Air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h. Determine the SEER and HSPF (as applicable) in accordance with ANSI/AHRI 1230–2010; however, the following enumerated provisions of that document are not applicable.

(1) Section 5.1.2—*Manufacturer involvement*,

(2) Section 6.6—*Verification testing and uncertainty*

Sections 3 through 6 of this appendix provide additional instructions for determining SEER and HSPF. In cases where there is a conflict, the language of this appendix takes precedence over ANSI/AHRI 1230–2010.

3. Optional break-in period. Manufacturers may optionally specify a “break-in” period, not to exceed 20 hours, to operate the equipment under test prior to conducting the test method specified in this appendix. A

manufacturer who elects to use an optional compressor break-in period in its certification testing should record this period's duration as part of the information in the supplemental testing instructions under 10 CFR 429.43.

4. *Additional provisions for equipment set-up.* The only additional specifications that may be used in setting up the basic model for test are those set forth in the installation and operation manual shipped with the unit. Each unit should be set up for test in accordance with the manufacturer installation and operation manuals. Sections 3.1 through 3.3 of this appendix provide specifications for addressing key information typically found in the installation and operation manuals.

4.1. If a manufacturer specifies a range of superheat, sub-cooling, and/or refrigerant

pressure in its installation and operation manual for a given basic model, any value(s) within that range may be used to determine refrigerant charge or mass of refrigerant, unless the manufacturer clearly specifies a rating value in its installation and operation manual, in which case the specified rating value shall be used.

4.2. The airflow rate used for testing must be that set forth in the installation and operation manuals being shipped to the commercial customer with the basic model and clearly identified as that used to generate the DOE performance ratings. If a rated airflow value for testing is not clearly identified, a value of 400 standard cubic feet per minute (scfm) per ton shall be used.

4.3. For air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of

less than 65,000 Btu/h, the test set-up and the fixed compressor speeds (*i.e.*, the maximum, minimum, and any intermediate speeds used for testing) should be recorded and maintained as part of the test data underlying the certified ratings that is required to be maintained under 10 CFR 429.71.

5. *Refrigerant line length corrections for air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h.* For test setups where it is physically impossible for the laboratory to use the required line length listed in Table 3 of the ANSI/ASHRAE 1230-2010, then the actual refrigerant line length used by the laboratory may exceed the required length and the following cooling capacity correction factors are applied:

Piping length beyond minimum, X (ft)	Piping length beyond minimum, Y (m)	Cooling capacity correction (%)
0 > X ≤ 20	0 > Y ≤ 6.1	1
20 > X ≤ 40	6.1 > Y ≤ 12.2	2
40 > X ≤ 60	12.2 > Y ≤ 18.3	3
60 > X ≤ 80	18.3 > Y ≤ 24.4	4
80 > X ≤ 100	24.4 > Y ≤ 30.5	5
100 > X ≤ 120	30.5 > Y ≤ 36.6	6

6. *Manufacturer involvement in assessment or enforcement testing for air-cooled, three-phase, variable refrigerant flow multi-split air conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h.* A manufacturer's representative will be allowed to witness assessment and/or enforcement testing. The manufacturer's representative will be allowed to inspect and discuss set-up only with a DOE representative and adjust only the modulating components during testing in the presence of a DOE representative that are necessary to achieve steady-state operation. Only previously documented specifications for set-up as specified under sections 3 and 4 of this appendix will be used.

■ 13. Add appendix B1 to subpart F of part 431 to read as follows:

Appendix B1 to Subpart F of Part 431—Uniform Test Method for the Measurement of Energy Consumption of Air-Cooled, Three-Phase, Small Commercial Package Air Conditioning and Heating Equipment With a Cooling Capacity of Less Than 65,000 BTU/H and Air-Cooled, Three-Phase, Variable Refrigerant Flow Multi-Split Air Conditioners and Heat Pumps With a Cooling Capacity of Less Than 65,000 BTU/H

Note: Manufacturers must use the results of testing under this appendix to determine compliance with any amended standards for air-cooled, three-phase, small commercial package air conditioning and heating equipment with a cooling capacity of less than 65,000 Btu/h and air-cooled, three-phase, variable refrigerant flow multi-split air

conditioners and heat pumps with a cooling capacity of less than 65,000 Btu/h provided in § 431.97 that are published after January 1, 2021, and that rely on seasonal energy efficiency ratio 2 (SEER2) and heating seasonal performance factor 2 (HSPF2). Representations related to energy consumption must be made in accordance with the appropriate appendix that applies (*i.e.*, appendices B or B1) when determining compliance with the relevant standard. Manufacturers may also use this appendix to certify compliance with any amended standards prior to the applicable compliance date for those standards.

1. Incorporation by Reference

DOE incorporated by reference in § 431.95, the entire standard for AHRI Standard 210/240-2023, "Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment," approved 2020 (AHRI 210/240-2023); and ANSI/ASHRAE Standard 37-2009, ("ANSI/ASHRAE 37-2009"), "Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment," ASHRAE approved June 24, 2009. However, certain enumerated provisions of AHRI 210/240-2023 and ANSI/ASHRAE 37-2009, as set forth in paragraphs (a) and (b) of this section, are inapplicable. To the extent there is a conflict between the terms or provisions of a referenced industry standard and the CFR, the CFR provisions control.

(a) AHRI 210/240-2023:

(i) Section 6 Rating Requirements—6.1 Standard Ratings—6.1.8 Tested Combinations or Tested Units is inapplicable as specified in section 2.1(1) of this appendix,

(ii) Section 6 Rating Requirements—6.2 Application Ratings is inapplicable as specified in section 2.1(2) of this appendix,

(iii) Section 6 Rating Requirements—6.4 Ratings is inapplicable as specified in section 2.1(3) of this appendix,

(iv) Section 6 Rating Requirements—6.5 Uncertainty and Variability is inapplicable as specified in section 2.1(4) of this appendix,

(v) Section 7 Minimum Data Requirements for Published Ratings is inapplicable as specified in section 2.1(5) of this appendix,

(vi) Section 8 Operating Requirements is inapplicable as specified in section 2.1(6) of this appendix,

(vii) Section 9 Marking and Nameplate Data is inapplicable as specified in section 2.1(7) of this appendix,

(viii) Section 10 Conformance Conditions is inapplicable as specified in section 2.1(8) of this appendix,

(ix) Appendix C Certification of Laboratory Facilities Used to Determine Performance of Unitary Air-Conditioning & Air-Source Heat Pump Equipment—Informative is inapplicable as specified in section 2.1(9) of this appendix,

(x) Appendix F ANSI/ASHRAE Standard 116-2010 Clarifications/Exceptions—Normative—F15.2 and F17 are inapplicable as specified in section 2.1(10) of this appendix,

(xi) Appendix G Unit Configuration for Standard Efficiency Determination—Normative is inapplicable as specified in section 2.1(11) of this appendix,

(xi) Appendix H Off-Mode Testing—Normative is inapplicable as specified in section 2.1(12) of this appendix,

(xii) Appendix I Verification Testing—Normative is inapplicable as specified in section 2.1(13) of this appendix.

(b) ANSI/ASHRAE 37-2009:

(i) Section 1 Purpose is inapplicable as specified in section 2.2(1) of this appendix,

(ii) Section 2 Scope is inapplicable as specified in section 2.2(2) of this appendix, and

(iii) Section 4 Classification is inapplicable as specified in section 2.2(3) of this appendix.

2. *General.* Determine the seasonal energy efficiency ratio 2 (SEER2) and heating seasonal performance factor 2 (HSPF2) (as applicable) in accordance with AHRI 210/240–2023, “Performance Rating of Unitary Air-Conditioning & Air-Source Heat Pump Equipment” and ANSI/ASHRAE 37–2009 “Methods of Testing for Rating Electronically Driven Unitary Air-Conditioning and Heat Pump Equipment”; however, the following enumerated provisions of that document are not applicable. Sections 3 and 4 of this appendix provide additional instructions for determining SEER2 and HSPF2. In cases where there is a conflict, the language of this appendix takes precedence over AHRI 210/240–2023. Any subsequent amendment to a referenced document by the standard-setting organization will not affect the test procedure in this appendix, unless and until the test procedure is amended by DOE. Material is incorporated as it exists on the date of the approval, and a notice of any change in the incorporation will be published in the **Federal Register**.

2.1. *Excepted sections of AHRI 210/240–2023*

- (1) Section 6 Rating Requirements—6.1 Standard Ratings—6.1.8 Tested Combinations or Tested Units,
- (2) Section 6 Rating Requirements—6.2 Application Ratings,
- (3) Section 6 Rating Requirements—6.4 Ratings,
- (4) Section 6 Rating Requirements—6.5 Uncertainty and Variability,
- (5) Section 7 Minimum Data Requirements for Published Ratings,
- (6) Section 8 Operating Requirements,
- (7) Section 9 Marking and Nameplate Data,
- (8) Section 10 Conformance Conditions,
- (9) Appendix C Certification of Laboratory Facilities Used to Determine Performance of Unitary Air-Conditioning & Air-Source Heat Pump Equipment—Informative,
- (10) Appendix F ANSI/ASHRAE Standard 116–2010 Clarifications/Exceptions—Normative—F15.2 and F17,
- (11) Appendix G Unit Configuration for Standard Efficiency Determination—Normative,
- (12) Appendix H Off-Mode Testing—Normative, and
- (13) Appendix I Verification Testing—Normative.

2.2. *Excepted sections of ANSI/ASHRAE 37–2009*

- (1) Section 1 Purpose,
- (2) Section 2 Scope,
- (3) Section 4 Classification.

3. *Energy Measurement Accuracy.* The watt-hour (W·h) measurement system(s) shall be accurate within ± 0.5 percent or 0.5 W·h, whichever is greater, for both ON and OFF cycles. If two measurement systems are used, then the meters shall be switched within 15 seconds of the start of the OFF cycle and switched within 15 seconds prior to the start of the ON cycle.

4. *Cycle Stability Requirements.* Conduct three complete compressor OFF/ON cycles. Calculate the degradation coefficient C_D for each complete cycle. If all three C_D values are within 0.02 of the average C_D then stability has been achieved, and the highest C_D value of these three shall be used. If stability has not been achieved, conduct additional cycles, up to a maximum of eight cycles total, until stability has been achieved between three consecutive cycles. Once stability has been achieved, use the highest C_D value of the three consecutive cycles that establish stability. If stability has not been achieved after eight cycles, use the highest C_D from cycle one through cycle eight, or the default C_D , whichever is lower.

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