DEPARTMENT OF ENERGY

10 CFR Parts 429 and 431

[EERE–2021–BT–TP–0017]

RIN 1904–AE45

Energy Conservation Program: Test Procedure for Computer Room Air Conditioners

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

ACTION: Final rule.

SUMMARY: The U.S. Department of Energy (''DOE'') is publishing a final rule to amend its test procedure for computer room air conditioners (''CRACs''). DOE is incorporating by reference the latest version of the relevant industry consensus test standard, AHRI 1360–2022. DOE is also adopting the net sensible coefficient of performance (''NSenCOP'') metric in its test procedures for CRACs. Additionally, DOE is amending certain provisions for representations and enforcement.

DATES: The effective date of this rule is May 11, 2023. The final rule changes will be mandatory for CRAC equipment testing starting April 5, 2024. The incorporation by reference of certain materials listed in this rule is approved by the Director of the Federal Register on May 11, 2023.

ADDRESSES: The docket, which includes **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *www.regulations.gov* under docket number EERE–2021–BT–TP–0017. All documents in the docket are listed in the *www.regulations.gov* index. However, not all documents listed in the index may be publicly available, such as those containing information that is exempt from public disclosure.

A link to the docket web page can be found at: *www.regulations.gov/docket/EERE-2021-BT-TP-0017.* The docket web page contains instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 287–1445 or by email: *ApplianceStandardsQuestions@ee.doe.gov.*

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SUPPLEMENTARY INFORMATION: DOE incorporates by reference the following industry standards:

AHRI Standard 1360–2022 (I–P), ''2022 Standard for Performance Rating of Computer and Data Processing Room Air Conditioners'', copyright 2022 (''AHRI 1360–2022'') into parts 429 and 431.

ANSI/ASHRAE Standard 37–2009, ''Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment,'' approved June 24, 2009 (''ANSI/ASHRAE 37–2009'') into part 431.

ASHRAE Standard 127–2007, ''Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners'', approved June 28, 2007 (''ANSI/ASHRAE 127–2007'') into part 431.

ANSI/ASHRAE 127–2020, ''Method of Testing for Rating Air-Conditioning Units Serving Data Center (DC) and Other Information Technology Equipment (ITE) Spaces'', ANSI-approved November 30, 2020 (''ANSI/ASHRAE 127–2020'') into part 431.

Copies of AHRI 1360–2022 can be obtained from the Air-Conditioning, Heating, and Refrigeration Institute (''AHRI''), 2311 Wilson Blvd., Suite 400, Arlington, VA 22201, (703) 524–8800, or online at: *www.ahrinet.org.*

Copies of ANSI/ASHRAE 37–2009, ANSI/ASHRAE 127–2007, and ANSI/ASHRAE 127–2020, can be obtained from the American National Standards Institute (''ANSI''), 25 W 43rd Street, 4th Floor, New York, NY 10036, (212) 642–4900, or online at: *webstore.ansi.org/.*

For a further discussion of these standards, see section IV.N of this document.

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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 the U.S. Department of Energy (''DOE'') is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6311(1)(B)–(D)) Commercial package air conditioning and heating equipment includes computer room air conditioners (''CRACs'') as an equipment category. DOE's test procedures for CRACs are currently prescribed at title 10 of the Code of Federal Regulations (''CFR''), Table 1 to § 431.96. The following sections discuss DOE's authority to establish and amend test procedures for CRACs and relevant background information regarding DOE's consideration of amendments to the test procedures for this equipment.

A. Authority

The Energy Policy and Conservation Act, as amended (''EPCA''),[1] among other things, authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part C[2] of EPCA, Public Law 94–163 (42 U.S.C. 6311–6317, as codified), 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. This covered equipment includes small, large, and very large commercial package air conditioning and heating equipment. (42 U.S.C. 6311(1)(B)–(D)) Commercial package air conditioning and heating equipment includes CRACs, which are the subject of this final rule.

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

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 other 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) and (b); 42 U.S.C. 6297) DOE may, however, grant waivers of Federal preemption in limited circumstances 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 also sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered equipment. Specifically, EPCA requires that any test procedures prescribed or amended under this section must be reasonably designed to produce test results which reflect energy efficiency, energy use, or estimated annual operating cost of a given type of covered equipment (or class thereof) during a representative average use cycle and requires that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2))

EPCA requires that the test procedures for commercial package air conditioning and heating equipment (of which CRACs are a category) be those generally accepted industry testing procedures or rating procedures developed or recognized by the Air-Conditioning, Heating and Refrigeration Institute (''AHRI'') or by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (''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 such an industry test procedure is amended, DOE must update 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))

EPCA also requires that, at least once every seven years, DOE evaluate test procedures for each type of covered equipment, including CRACs, 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. 6314(a)(1)–(3))

In addition, if DOE determines that a test procedure amendment is warranted, the Department must publish proposed test procedures in the **Federal Register** and afford interested persons an opportunity (of not less than 45 days' duration) 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 in the **Federal Register** its determination not to amend the test procedures. (42 U.S.C. 6314(a)(1)(A)(ii))

DOE is publishing this final rule amending the test procedure for CRACs in satisfaction of its aforementioned obligations under EPCA.

B. Background

On May 16, 2012, DOE published a final rule in the **Federal Register**, which, in relevant part, adopted test procedures for CRACs that incorporate by reference American National Standards Institute (''ANSI'')/ASHRAE Standard 127–2007, ''*Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners*'' (''ANSI/ASHRAE 127–2007''), which was the industry test procedure referenced in ASHRAE Standard 90.1–2010 for CRACs, as the basis for the Federal test procedure for such equipment. 77 FR 28928, 28989.

On October 26, 2016, ASHRAE published ASHRAE Standard 90.1–2016, which included updates to the test procedure (''TP'') references for CRACs as compared to ASHRAE Standard 90.1–2010 and ASHRAE Standard 90.1–2013.[3] This action by ASHRAE triggered DOE's obligations under 42 U.S.C. 6314(a)(4)(B), as outlined previously. Accordingly, DOE published a request for information (''RFI'') in the **Federal Register** on July 25, 2017 (''July 2017 ASHRAE TP RFI'') to collect information and data in consideration of amendments to DOE's test procedures for commercial package air conditioning and heating equipment, given the test procedure updates included in ASHRAE Standard 90.1–2016. 82 FR 34427. Following the July 2017 ASHRAE TP RFI, AHRI published additional updates to its test procedure standard for CRACs on December 21, 2017 (*i.e.,* AHRI Standard 1360–2017, ''2017 Standard for Performance Rating of Computer and Data Processing Room Air Conditioners'' (''AHRI 1360–2017'')). ASHRAE published ASHRAE Standard 90.1–2019 on October 24, 2019, which updated the test procedure referenced for CRACs from AHRI 1360–2016 to AHRI 1360–2017 and added equipment classes for ceiling-mounted CRACs. Following the publication of ASHRAE Standard 90.1–2019, AHRI initiated work on an update to AHRI Standard 1360 (*i.e.,* AHRI Standard 1360–202X Draft, ''Performance Rating of Computer and Data Processing Room

[1] 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), which reflect the last statutory amendments that impact Parts A and A–1 of EPCA.

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

[3] More specifically, ASHRAE Standard 90.1–2016 references AHRI 1360–2016, ''Standard for Performance Rating of Computer and Data Processing Room Air Conditioners'' for CRACs.

Air Conditioners (''Draft Standard'')'' (''AHRI 1360–202X Draft'').

On February 7, 2022, DOE published in the **Federal Register** a notice of proposed rulemaking (''NOPR'') (''February 2022 NOPR'') proposing, in relevant part, to update the Federal test procedure for CRACs consistent with AHRI 1360–202X Draft. 87 FR 6948. A copy of the draft was added to the docket for this rulemaking for review by interested parties.[4] As stated in the February 2022 NOPR, if AHRI were to publish a final version of AHRI 1360–202X Draft prior to DOE publishing a final rule, DOE's intention would be to reference the latest version of AHRI 1360 in the final rule. 87 FR 6948, 6951 (Feb. 7. 2022). DOE held a public meeting webinar on March 15, 2022, to discuss the proposed amendments to the CRACs test procedure presented in the February 2022 NOPR.

DOE received several comments in response to the February 2022 NOPR. Table I.1 lists the commenters, along with each commenter's abbreviated name used throughout the final rule. Discussion of these comments, along with DOE's responses, are provided in the appropriate sections of this document.

TABLE I.1—LIST OF COMMENTERS WITH WRITTEN SUBMISSIONS IN RESPONSE TO THE FEBRUARY 2022 NOPR

Commenter(s)	Abbreviation used in this final rule	Comment No. in the docket	Commenter type
Air-Conditioning, Heating and Refrigeration Institute	AHRI[5]	9	Industry Trade Organization.
Appliance Standards Awareness Project, American Council for an Energy-Efficient Economy, Natural Resources Defense Council and New York State Energy Research and Development Authority.	Joint Advocates	7	Efficiency Advocacy Organizations.
Northwest Energy Efficiency Alliance	NEEA	5	Efficiency Advocacy Organization.
Pacific Gas and Electric Company (''PG&E''), San Diego Gas and Electric, and Southern California Edison; collectively, the California Investor-Owned Utilities.	CA IOUs	6	Utilities.

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.[6] To the extent that interested parties have provided written comments that are substantively similar to any oral comments provided during the March 15, 2022 NOPR public meeting, DOE cites the written comments throughout this final rule. Any oral comments provided during the webinar that are substantively distinct from a submitter's written comments are summarized and cited separately throughout this final rule.[7]

On March 7, 2022, DOE published in the **Federal Register** a NOPR proposing revised energy conservation standards (''March 2022 ECS NOPR'') for CRACs in terms of net sensible coefficient of performance (''NSenCOP''). 87 FR 12802. DOE conducted a crosswalk analysis to translate the current Federal standards in terms of sensible coefficient of performance (''SCOP'') to equivalent levels in terms of NSenCOP to evaluate potential amendments to the energy conservation standards, as appropriate. *Id.* at 87 FR 12817–12826. Any comments received in response to the February 2022 NOPR that pertain to energy conservation standards will be addressed in the energy conservation standards rulemaking and are not addressed in this document.

In November, 2022, AHRI finalized AHRI 1360–202X Draft without substantial change and published AHRI Standard 1360–2022, ''Performance Rating of Computer and Data Processing Room Air Conditioners (''AHRI 1360–2022'').

In January 2023, ASHRAE published the 2022 edition of ASHRAE Standard 90.1, ''Energy Standard for Buildings Except Low-Rise Residential Buildings'' (''ASHRAE Standard 90.1–2022''). ASHRAE Standard 90.1–2022 maintains AHRI 1360–2017 as the referenced test procedure reference for CRACs.

II. Synopsis of the Final Rule

In this final rule, DOE is updating its regulations for CRACs by: (1) incorporating by reference the updated version of AHRI Standard 1360 (*i.e.,* AHRI 1360–2022), as well as the relevant industry test standards referenced in AHRI 1360–2022; (2) establishing provisions for determining NSenCOP for CRACs; (3) clarifying the definition of a ''computer room air conditioner'' to include consideration of how the equipment is marketed; and (4) amending certain provisions for representations and enforcement in 10 CFR part 429, consistent with the changes adopted in the test procedure. In terms of implementation, DOE is adding new appendices E and E1 to subpart F of 10 CFR part 431, ''Uniform test method for measuring the energy consumption of computer room air conditioners,'' (''appendix E'' and ''appendix E1,'' respectively). The current DOE test procedure for CRACs is being relocated to appendix E without change, and the new test procedure incorporating by reference AHRI 1360–2022 is being established in appendix E1 for determining NSenCOP. Testing in accordance with appendix E1 is not required until such time as compliance is required with amended energy conservation standards for CRACs that rely on NSenCOP, should DOE adopt such standards. After such time, appendix E will no longer be used as part of the Federal test procedure.

The adopted amendments are summarized in Table II.1 and compared to the relevant test procedure provisions in place prior to the amendment, as well as the reason for the adopted change.

[4] The AHRI 1360–202X Draft test procedure is available in the docket for this rulemaking at: *www.regulations.gov/document/EERE-2021-BT-TP-0017-0001.*

[5] AHRI's comment was received 23 days after the comment submission deadline.

[6] The parenthetical reference provides a reference for information located in the docket of DOE's rulemaking to develop test procedures for CRACs. (Docket No. EERE–2021–BT–TP–0017, which is maintained at *www.regulations.gov.*) The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

[7] The March 15, 2022 TP NOPR Public Meeting Transcript can be found in the docket for this rulemaking at: *www.regulations.gov* under entry number EERE–2021–BT–TP–0017–0008. Comments arising from the public meeting are cited as follows: (commenter name, Public Meeting Transcript, No. 8 at p. X).

TABLE II.1—SUMMARY OF CHANGES IN THE AMENDED CRACS TEST PROCEDURE RELATIVE TO CURRENT TEST PROCEDURE

DOE test procedure prior to amendment	Amended test procedure	Attribution
Located in 10 CFR 431.96	Current test procedure unchanged but relocated to appendix E.	Improve readability.
Incorporates by reference ANSI/ASHRAE 127–2007.	Incorporates by reference in a new appendix E1—AHRI 1360–2022, ANSI/ASHRAE 127–2020, and ANSI/ASHRAE 37–2009.	Updates to the applicable industry test procedures.
Includes provisions for determining SCOP	Includes provisions for determining NSenCOP in appendix E1.	Updates to the applicable industry test procedures.
CRAC definition criteria include: (1) used in computer rooms (or similar applications); (2) whether rated for SCOP and tested in accordance with 10 CFR 431.96; and (3) not a consumer product.	CRAC definition criteria include: (1) marketed for use in computer rooms (or similar applications); and (2) not a consumer product.	To more clearly define CRACs and distinguish from other equipment categories.
Does not specify provisions specific to testing roof, wall, and ceiling-mounted CRAC units.	Defines roof, wall, and ceiling-mounted CRAC configurations and provides test provisions specific to such units.	Updates to the applicable industry test procedures.
Does not include CRAC-specific provisions for determination of represented values in 10 CFR 429.43.	Includes provisions in 10 CFR 429.43 specific to CRACs to determine represented values for models with specific components and prevent cooling capacity over-rating.	Establish CRAC-specific provisions for determination of represented values.
Does not include CRAC-specific enforcement provisions in 10 CFR 429.134.	Adopts product-specific enforcement provisions for CRACs regarding verification of cooling capacity and testing of units with specific components.	Establish provisions for DOE enforcement testing of CRACs.

DOE has determined that the amendments described in section III of this final rule regarding the establishment of appendix E do not alter the measured efficiency of CRACs or require retesting solely as a result of DOE's adoption of the amendments to the test procedure. DOE has determined, however, that the test procedure amendments in appendix E1 do alter the measured efficiency of CRACs and that such amendments are consistent with the updated industry test procedure. Further, use of appendix E1 and the amendments to the representation requirements in 10 CFR 429.43 are not required until the compliance date of any amended standards denominated in terms of NSenCOP, if adopted. However, manufacturers may use appendix E1 to certify compliance with any amended standards prior to the applicable compliance date for those standards. Additionally, DOE has determined that the finalized amendments will not increase the cost of testing. The effective date for the amended test procedures adopted in this final rule is 30 days after publication of this document in the **Federal Register**. Detailed discussion of DOE's actions is included in section III of this final rule.

III. Discussion

A. Scope of Applicability

DOE currently defines ''computer room air conditioner'' as a basic model of commercial package air-conditioning and heating equipment (packaged or split) that is: used in computer rooms, data processing rooms, or other information technology cooling applications; rated for SCOP and tested in accordance with 10 CFR 431.96; and is not a covered consumer product under 42 U.S.C. 6291(1)–(2) and 42 U.S.C. 6292. A CRAC may be provided with, or have as available options, an integrated humidifier, temperature and/or humidity control of the supplied air, and reheating function. 10 CFR 431.92. DOE did not receive any comments from stakeholders regarding any revision of scope for this rulemaking.

As discussed in section III.D.1 of this document, DOE is amending the definition of CRAC in this final rule. Specifically, DOE is revising the definition of ''computer room air conditioner'' to mean commercial package air conditioning and heating equipment (packaged or split) that is: marketed for use in computer rooms, data processing rooms, or other information technology cooling applications and not a covered consumer product under 42 U.S.C. 6291(1)–(2) and 6292. A computer room air conditioner may be provided with, or have as available options, an integrated humidifier, temperature and/or humidity control of the supplied air, and reheating function. Computer room air conditioners include, but are not limited to, the following configurations as defined in 10 CFR 431.92: down-flow, horizontal-flow, up-flow ducted, up-flow non-ducted, ceiling-mounted ducted, ceiling mounted non-ducted, roof-mounted, and wall-mounted. The scope of the CRAC test procedure, as amended by this final rule, is based on this revised definition.

B. Revised Organization of the CRAC Test Procedure

In the February 2022 NOPR, DOE proposed to relocate and centralize the current test procedure for CRACs to a new appendix E to subpart F of 10 CFR part 431, without change. 87 FR 6948, 6952 (Feb. 7, 2022). As proposed, appendix E would continue to reference ANSI/ASHRAE 127–2007 and provide instructions for determining SCOP. *Id.* As proposed, CRACs would be required to be tested according to appendix E until such time as compliance is required with amended energy conservation standards that rely on the NSenCOP metric, should DOE adopt such standards. *Id.*

Accordingly, in parallel, DOE proposed to establish an amended test procedure for CRACs that adopted the substance of AHRI 1360–202X Draft in a new appendix E1 to subpart F of 10 CFR part 431. *Id.* DOE noted that it intended to incorporate by reference the final published version of AHRI 1360–202X Draft in the final rule, unless there were substantive changes between the draft and published versions, in which case DOE may adopt the substance of AHRI 1360–202X Draft or provide additional opportunity for comment on changes presented in the final version of the industry consensus test standard. *Id.* DOE noted that CRACs would not be

required to be tested according to the test procedure in appendix E1 until such time as compliance is required with amended energy conservation standards that rely on the NSenCOP metric, should DOE adopt such standards. *Id.*

DOE did not receive any comments in response to the February 2022 NOPR's proposed reorganization of the test procedure. As discussed in the following sections of this final rule, DOE is adopting the finalized version of AHRI 1360 (*i.e.,* AHRI 1360–2022), including the NSenCOP metric. AHRI 1360–2022 does not include any significant revisions as compared to AHRI 1360–202X Draft Accordingly, for the reasons discussed in the February 2022 NOPR and as discussed in the preceding paragraphs, DOE is finalizing the proposed reorganization of the test procedure by establishing appendices E and E1 for testing CRACs.

C. Updates to Industry Test Standards

As noted previously, DOE's current test procedure for CRACs is codified at 10 CFR 431.96 and incorporates by reference ANSI/ASHRAE Standard 127–2007,[8] which is the test procedure recognized by ASHRAE Standard 90.1–2010 for CRACs. However, the 2019 and 2022 versions of ASHRAE Standard 90.1 recognize AHRI 1360–2017 as the test procedure for CRACs.

After publication of AHRI 1360–2017, DOE and other stakeholders supported the AHRI 1360 committee in its process to further update AHRI Standard 1360, which culminated in the publication of AHRI 1360–2022. AHRI 1360–2022 references ANSI/ASHRAE 127–2020, ''Method of Testing for Rating Computer and Data Processing Room Unitary Air Conditioners'' (''ANSI/ASHRAE 127–2020''),[9] and ANSI/ASHRAE 37–2009, ''Methods of Testing for Rating Electrically Driven Unitary Air-Conditioning and Heat Pump Equipment'' (''ANSI/ASHRAE 37–2009''). Both AHRI 1360–2017 and AHRI 1360–2022 include significant changes from ANSI/ASHRAE 127–2007, including the use of NSenCOP instead of SCOP as the test metric. Both efficiency metrics (NSenCOP and SCOP) are ratios of net sensible cooling capacity delivered to the power consumed, but there are several differences in the conditions at which tests are performed. Section III.E.1 of this final rule includes further discussion of the differences between these test metrics.

In the February 2022 NOPR, DOE proposed to adopt AHRI 1360–202X Draft and provided a copy of that industry test standard in the regulatory docket.[10] 87 FR 6948, 6952 (Feb. 7, 2022).

In response to the February 2022 NOPR, AHRI commented that the AHRI 1360–202X draft standard was not yet complete (at the time), and manufacturers, particularly those of newly included equipment, had not yet had an opportunity to evaluate the impact of this change, nor had the ASHRAE 90.1 committee. (AHRI, No. 9 at p. 2) AHRI further commented that DOE does not have the authority to adopt a test procedure edition not yet cited in ASHRAE Standard 90.1 as the national test procedure. *Id.* Consequently, AHRI recommended that DOE should adopt AHRI 1360–2017, continue to work with AHRI and other relevant stakeholders to finalize the new edition of the test procedure, support the introduction of a proposed amendment to ASHRAE Standard 90.1, and then adopt the new procedure as the national test procedure during the next rulemaking for these products. (AHRI, No. 9 at p. 3)

After the publication of the February 2022 NOPR, AHRI 1360–202X Draft was finalized and issued as AHRI 1360–2022 in November, 2022. AHRI 1360–2022 does not include any significant deviations from AHRI 1360–202X Draft. As such, the adoption of AHRI 1360–2022 in this final rule is consistent with the proposal to reference AHRI 1360–202X Draft in the February 2022 NOPR.

AHRI's concern regarding the draft status of AHRI 1360–202X Draft no longer applies, given the subsequent finalization of the draft and publication of AHRI 1360–2022. DOE notes that the Department was heavily involved with the AHRI 1360 committee, along with relevant industry stakeholders, to aid in the development of AHRI 1360–2022. DOE further notes that AHRI 1360–2022 represents an industry consensus update to AHRI 1360–2017. DOE disagrees with AHRI's argument that it lacks statutory authority for the adoption of AHRI 1360–2022, rather than AHRI 1360–2017, for the reasons that follow.

With respect to small, large, and very large commercial package air conditioning and heating equipment (of which CRACs are a category), EPCA directs that when the generally accepted industry testing procedures or rating procedures developed or recognized by AHRI or by ASHRAE, as referenced in ASHRAE Standard 90.1, is amended, the Secretary shall amend the DOE test procedure consistent with the amended industry test procedure or rating procedure unless the Secretary determines, by clear and convincing evidence, that to do so would not meet the requirements for test procedures to produce results representative of an average use cycle and is not unduly burdensome to conduct. (42 U.S.C. 6314(a)(4)(B))

As noted, DOE has a duty under the statute to adopt a test procedure that produces results representative of the covered equipment's average use cycle. Here, DOE has concluded, supported by clear and convincing evidence, that AHRI 1360–2022 would better meet that criterion of EPCA than AHRI 1360–2017. First, AHRI 1360–2022 includes test provisions for measuring performance of roof-mounted and wall-mounted CRACs, configurations which are not considered in AHRI 1360–2017. Were DOE to adopt AHRI 1360–2017 instead of AHRI 1360–2022, the DOE test procedure would not address representations for these configurations in terms of NSenCOP. Second, AHRI 1360–2022 provides clarifications and additional test requirements on several test procedure elements, including test tolerances, enclosure for CRACs with compressors in indoor units, secondary verification of capacity, ducted condensers, and refrigerant charging instructions. These elements were discussed in detail in the February 2022 NOPR. *See* 87 FR 6948, 6960–6963 (Feb. 7, 2022). These additional test requirements improve the representativeness of the CRACs test procedure. For these reasons, DOE considers AHRI 1360–2022 to be more representative of CRAC operation than AHRI 1360–2017. With this finding made, DOE does not read EPCA as requiring the Department to dissect the industry standard and surgically transplant individual provisions of the new industry standard into the prior industry standard. DOE views the industry test standard as a functioning whole, so the approach AHRI suggests could insert errors and inconsistencies into the industry standard, as would prevent its proper functioning in practice as part of the DOE test procedure. Further, even if AHRI's approach were possible, it would be largely unnecessary; adoption of all the major provisions of the latest industry

[8] While ANSI/ASHRAE Standard 127–2007 is incorporated by reference in its entirety, Table 1 to 10 CFR 431.96 (which defines the applicable test methods for each category of equipment) excludes section 5.11 of ANSI/ASHRAE Standard 127–2007 for testing CRACs. The test procedure also includes additional provisions related to break-in period and test set-up. *See* 10 CFR 431.96(c) and (e).

[9] ASHRAE published ANSI/ASHRAE Standard 127–2020 on November 30, 2020.

[10] *See* Document No. EERE–2021–BT–TP–0017–0001 at *www.regulations.gov.*

test standard would arguably result in the remaining provisions being uncontroversial. Again, DOE would point out that the test procedure in question is the most current version of the industry's own approved test procedure, even if ASHRAE Standard 90.1 has not yet caught up with such change. DOE considered AHRI 1360–2017, as EPCA requires, but it ultimately determined that AHRI 1360–2022 would produce results that better reflect an average use cycle than would AHRI 1360–2017. DOE has concluded that EPCA does not allow the Department to turn a blind eye to such real world developments.

Furthermore, DOE believes that Congress foresaw the practical benefits of a statutory reading consistent with DOE's interpretation. Although DOE recognizes that adopting AHRI 1360–2022 as the Federal test procedure for CRACs may create some disharmony between the Federal test procedure and the test procedure currently specified in ASHRAE Standard 90.1 for a period of time, such situation is arguably preferable to the alternative in which DOE and stakeholders would need to waste significant resources to reinitiate another rulemaking in short order after this proceeding to once again amend the Federal test procedure for CRACs to update the reference therein from AHRI 1360–2017 to AHRI 1360–2022—the very same testing standard available for consideration at the present time.

Finally, DOE notes that manufacturers are not required to use the test procedure to certify compliance with any energy conservation standards for CRACs until the compliance date established for such standards denominated in terms of the NSenCOP metric, if DOE proceeds to adopt such standards. The difference in ratings between measuring SCOP per the current Federal test procedure and measuring NSenCOP per the test procedure adopted in this final rule (which incorporates by reference AHRI 1360–2022) is addressed in the ongoing energy conservation standards rulemaking (*see* 87 FR 12802 (March 7, 2022)).

Therefore, in light of these updates to the relevant industry consensus standards and for the reasons explained, DOE is amending its test procedure for CRACs by incorporating by reference AHRI 1360–2022 for use in the new appendix E1. Specifically, in the new test procedure for CRACs at appendix E1, DOE is adopting sections 3.1, 3.2.2, 3.2.7, 3.2.22, 3.2.25, 3.2.27, 3.2.28, 3.2.37, 3.2.38, 5, 6.1–6.3, 6.6, and 6.8 and Appendices C, E, and F of AHRI 1360–2022 for the Federal test procedure for CRACs.[11]

In the February 2022 NOPR, DOE proposed to incorporate by reference several industry standards that are internally referenced by AHRI 1360–202X Draft. First, DOE proposed to incorporate by reference ANSI/ASHRAE 127–2020. Specifically, in the proposed test procedure for CRACs at 10 CFR part 431, subpart F, appendix E1, DOE proposed to reference Figure A–1, *Test duct for measuring air flow and static pressure on downflow units,* of Appendix A of ANSI/ASHRAE 127–2020, because Figure A–1 of Appendix A is referenced in section 5.8 of AHRI 1360–202X Draft. Second, DOE proposed to incorporate by reference ANSI/ASHRAE 37–2009 because section 5, Appendix D, and Appendix E of AHRI 1360–202X Draft reference methods of test in ANSI/ASHRAE 37–2009. More specifically, DOE proposed to adopt all sections of ANSI/ASHRAE 37–2009, except sections 1, 2, and 4. 87 FR 6948, 6952 (Feb. 7, 2022).

DOE did not receive any comments in response to its proposal to reference ANSI/ASHRAE 127–2020 and ANSI/ASHRAE 37–2009 in the test method for CRACs. These standards are also referenced in the finalized standard, AHRI 1360–2022, which DOE is incorporating by reference in this final rule. Therefore, for the reasons discussed in the preceding paragraphs and in the February 2022 NOPR, DOE incorporates by reference ANSI/ASHRAE 127–2020 and ANSI/ASHRAE 37–2009, and adopts the relevant sections for testing CRACs, as proposed in the February 2022 NOPR.

D. Definitions

1. CRAC Definition

As discussed, DOE currently defines a CRAC as a basic model of commercial package air-conditioning and heating equipment (packaged or split) that is: used in computer rooms, data processing rooms, or other information technology cooling applications; rated for SCOP and tested in accordance with 10 CFR 431.96; and is not a covered consumer product under 42 U.S.C. 6291(1)–(2) and 42 U.S.C. 6292. 10 CFR 431.92. A computer room air conditioner may be provided with, or have as available options, an integrated humidifier, temperature and/or humidity control of the supplied air, and reheating function. *Id.* In defining a CRAC, DOE was unable to identify physical characteristics that consistently distinguish CRACs from other categories of commercial package air conditioning and heating equipment that provide comfort-cooling. *See* 77 FR 16769, 16772–16774 (March 22, 2012); 77 FR 28928, 28947–28948 (May 16, 2012).

In the February 2022 NOPR, DOE proposed to amend the CRAC definition to include how the manufacturer markets a model for use, consistent with the definition in the draft industry standard, AHRI 1360–202X Draft, which also defines CRACs based on marketing.[12] 87 FR 6948, 6952–6954 (Feb. 7, 2022). DOE also proposed to remove the current wording ''. . . rated for sensible coefficient of performance (SCOP) and tested in accordance with 10 CFR 431.96'' to ensure that a unit that otherwise meets the definition of a CRAC would be covered as a CRAC regardless of how the manufacturer has tested and rated the model. *Id.* DOE also proposed to remove the unnecessary current wording ''. . . a basic model of'' to avoid confusion as to whether the equipment constitutes a basic model—DOE specifies different basic model definitions for each equipment category at 10 CFR 431.92—before the determination is made whether the equipment meets the CRAC definition. *Id.* Specifically, DOE proposed to define ''computer room air conditioner'' as commercial package air conditioning and heating equipment (packaged or split) that is: marketed for use in computer rooms, data processing rooms, or other information technology cooling applications; and not a covered consumer product under 42 U.S.C. 6291(1)–(2) and 6292. *Id.* The definition stated that a computer room air conditioner may be provided with, or have as available options, an integrated humidifier, temperature and/or humidity control of the supplied air, and reheating function. *Id.* Additionally, DOE proposed to specify in the definition that computer room air conditioners include, but are not limited to, the following configurations as defined in 10 CFR 431.92: down-flow, horizontal-flow, up-flow ducted, up-flow non-ducted, ceiling-mounted

[11] DOE notes that the substance of these provisions remains the same as those proposed in the February 2022 TP NOPR, but AHRI did some reorganization in moving from AHRI 1360–202X Draft to AHRI 1360–2022. Consequently, the adopted section numbers cited here differ from those presented in DOE's proposed rule. *See* 87 FR 6948, 6952 (Feb. 7, 2022).

[12] Section 3.5 of AHRI 1360–202X Draft defines ''computer room air conditioner'' as a subset of ''computer and data processing room air conditioner.'' Section 3.4 of AHRI 1360–202X Draft defines ''computer and data processing room air conditioner,'' as an air conditioning unit specifically marketed for cooling data centers and information technology equipment.

ducted, ceiling mounted non-ducted, roof-mounted, and wall-mounted. *Id.*

In the February 2022 NOPR, DOE requested comment on the proposed definition for ''computer room air conditioner'' that distinguishes between CRACs and other categories of air conditioning equipment, based on the marketing of the equipment. 87 FR 6948, 6954 (Feb. 7, 2022).

AHRI recommended that DOE remove roof-mounted and wall-mounted units from the CRAC definition, as they are currently not included in the scope of AHRI 1360–2017 and of ASHRAE Standard 90.1–2019. (AHRI, No. 9 at pp. 4–5) Instead, AHRI expressed support for a definition consistent with DOE's proposal, but with roof-mounted and wall-mounted CRACs redacted from the definition. *Id.*

The CA IOUs recommended adding the term ''exclusively'' to the proposed revised CRAC definition and to exclude comfort cooling products that are sometimes marketed for use in computer rooms (or similar applications) from the requirement to be tested to the CRAC test procedure. (CA IOUs, No. 6 at p. 1) The CA IOUs provided estimated performance data at CRAC rating conditions for commercial unitary air conditioners (''CUACs'') and 3-phase central air conditioners that they asserted as indicating that these equipment categories will always meet the CRAC efficiency standards in ASHRAE Standard 90.1–2019. (CA IOUs, No. 6 at pp. 1–5) The CA IOUs did not analyze the performance of single-packaged vertical air conditioners (''SPVU'') equipment under the CRAC test conditions but noted that DOE's energy efficiency metric for SPVUs is also energy efficiency ratio (''EER''), that SPVUs are tested at the same conditions as CUACs, and that the energy conservation standards for SPVUs are similar to the CUAC EER requirements in ASHRAE Standard 90.1–2019. Therefore, the CA IOUs recommended that DOE should also exclude SPVUs from the requirement of testing to the CRAC test procedure for equipment marketed for use in computer rooms (or similar applications). *Id.* Alternatively, the CA IOUs recommended that DOE allow NSenCOP to be calculated with an alternate efficiency determination method (''AEDM''). (CA IOUs, No. 6 at p. 6)

In response to AHRI, the addition of roof-mounted and wall-mounted CRACs to the scope of AHRI 1360–202X Draft, and as finalized in AHRI 1360–2022, occurred after considerable deliberation in the AHRI 1360 committee, in which DOE actively participated. As such, DOE considers this inclusion in a published AHRI standard to now represent industry consensus that models meeting the definition of roof-mounted and wall-mounted CRACs should be tested to AHRI 1360–2022. Further, DOE has concluded that because such models meet the definition of CRAC and exist on the market, the Federal test procedure should include test provisions for such models. Therefore, DOE has determined the addition of these configurations to be appropriate for the CRAC Federal test procedure.

In response to CA IOUs, DOE is not adopting the suggested exclusionary language (*i.e.,* limiting coverage of CRAC regulations to models marketed exclusively for computer room cooling applications) because this would cause any CRAC equipment marketed for both data centers and comfort cooling to not meet the definition of a CRAC as set out in AHRI 1360–2022. To the extent that a basic model is covered under more than one equipment category (*e.g.,* CRAC and CUAC), it would be subject to the regulations applicable to each equipment class that covers that basic model. Regarding AEDMs, DOE notes that current DOE regulations already allow manufacturers to use AEDMs to develop CRAC efficiency ratings, provided they perform physical testing on two test models per validation class. 10 CFR 429.70(c)(2).

In summary, for the reasons discussed, DOE is updating the ''computer room air conditioner'' definition in 10 CFR 431.92 as proposed in the February 2022 NOPR. Further, regarding the ''marketed for'' criterion in the revised CRAC definition, DOE will consider any publicly-available document published by the manufacturer (*e.g.,* product literature, catalogs, and packaging labels) to determine the application for which the equipment is marketed.

2. CRAC Configuration Definitions

CRACs can be installed in a variety of different configurations that vary by installation location, direction of airflow over the evaporator coil (*e.g.,* up, down, or horizontal), and by return and discharge air connections (*e.g.,* raised floor plenum, ducted, free air). To provide additional instruction as to which configuration (and, thus, which testing requirements and standards, as applicable) should be used for testing, the February 2022 NOPR proposed to add definitions for the following terms, consistent with the definitions in AHRI 1360–202X Draft: floor-mounted, ceiling-mounted, wall-mounted, roof-mounted, up-flow, down-flow, horizontal-flow, up-flow ducted, up-flow non-ducted, ceiling-mounted ducted, ceiling-mounted non-ducted, and fluid economizer. 87 FR 6948, 6954 (Feb. 7, 2022). DOE requested comment on the proposed definitions. *Id.*

AHRI suggested that DOE should adopt definitions consistent with AHRI 1360–2017, stating that the current draft procedure was not yet ready for adoption. Instead, AHRI recommended that DOE should wait to adopt the definitions in AHRI 1360–202X Draft until they are adopted through the ASHRAE Standard 90.1 process. (AHRI, No. 9 at p. 5)

DOE notes that AHRI's concern about the draft status of AHRI 1360–202X Draft no longer applies, given the finalization and publication of AHRI 1360–2022. Furthermore, for the reasons discussed in section III.C of this document, the Department has concluded that EPCA does not preclude the agency from considering this updated industry test standard until it has been formally adopted through the ASHRAE Standard 90.1 process. Accordingly, DOE has concluded that the inclusion of revised definitions for CRAC configurations in the published AHRI standard represent industry consensus that these revised definitions in AHRI 1360–2022 appropriately classify different configurations of CRACs. DOE notes that the definitions finalized in AHRI 1360–2022 are substantively the same as those included in DOE's proposal. DOE further notes that AHRI did not raise substantive issues with the specific proposed definitions for CRAC configurations. Therefore, DOE has concluded that the definitions proposed in the February 2022 NOPR, which are consistent with the updated industry consensus test procedure AHRI 1360–2022, appropriately classify different configurations of CRACs to clarify which test conditions apply to each configuration.

As such, DOE is finalizing the definitions as proposed in the February 2022 NOPR. Specifically, DOE is defining ''floor-mounted,'' ''ceiling-mounted,'' ''wall-mounted,'' ''roof-mounted,'' ''up-flow,'' ''down-flow,'' ''horizontal-flow,'' ''up-flow ducted,'' ''up-flow non-ducted,'' ''ceiling-mounted ducted,'' ''ceiling-mounted non-ducted,'' and ''fluid economizer'' as set out in 10 CFR 431.92 [13] at the end of this document.

[13] As explained in the February 2022 NOPR, DOE is italicizing the defined terms within these definitions at 10 CFR 431.92 in order to signal to the reader which terms are separately defined. 87 FR 6948, 6954 (Feb. 7, 2022).

E. Metric

1. NSenCOP

DOE's current efficiency metric for CRACs is SCOP, which is a ratio of sensible cooling capacity delivered to the power consumed. For most categories of air conditioners and heat pumps other than CRACs, efficiency metrics are calculated based on total cooling capacity (which includes both sensible cooling and latent cooling). However, unlike the conditioned spaces in most commercial buildings, computer rooms and data centers typically have limited human occupancy and minimal dehumidification requirements, and, thus, primarily require only sensible cooling. Therefore, SCOP is calculated based on sensible cooling capacity rather than total cooling capacity.

As discussed, ASHRAE Standard 90.1–2016 amended the efficiency metric for CRACs from SCOP (measured per ANSI/ASHRAE 127–2007) to NSenCOP (measured per AHRI 1360–2016). ASHRAE Standard 90.1–2019 subsequently retained NSenCOP as the test metric, but it updated the test reference to AHRI 1360–2017 (which specifies NSenCOP as the test metric and has the same test conditions as AHRI 1360–2016). AHRI 1360–202X Draft also specifies NSenCOP as the test metric and maintains the rating conditions found in AHRI 1360–2017, while also adding rating conditions for roof-mounted and wall-mounted units.

Like SCOP, NSenCOP is a ratio of sensible cooling capacity to the power consumed. However, as discussed in the February 2022 NOPR, the test procedure to determine NSenCOP differs from that to determine SCOP in four key aspects: (1) For several CRAC configurations (*e.g.,* down-flow, up-flow ducted), different indoor entering air temperatures are specified; (2) for water-cooled CRACs, different entering water temperatures are specified; (3) for up-flow ducted configurations, different indoor air external static pressure (''ESP'') requirements are specified; and (4) for water-cooled and glycol-cooled CRACs, NSenCOP accounts for energy consumed by fans and pumps that would be installed in the outdoor heat rejection loop, which is not accounted for in SCOP. 87 FR 6948, 6956–6957 (Feb. 7, 2022).

In response to the changes to the efficiency metric and referenced industry test standard for CRACs in ASHRAE Standard 90.1–2019 and AHRI 1360–202X Draft, DOE proposed to update its efficiency metric for CRACs to NSenCOP and requested comment on its proposal. 87 FR 6948, 6957 (Feb. 7, 2022). DOE also sought feedback on whether the rating conditions in AHRI 1360–202X Draft are appropriately representative of field applications. *Id.*

On this topic, AHRI commented at the NOPR public meeting that it supported the adoption of NSenCOP as calculated in AHRI 1360–2017, as opposed to AHRI 1360–202X Draft. (AHRI, Public Meeting Transcript, No. 8 at pp. 11–12) AHRI stated that a minor clarification would be required to be made in AHRI 1360–2017, which would align the capacity bins in AHRI 1360–2017 with those in ASHRAE 90.1–2019. *Id.* AHRI asserted that the revised approach for up-flow CRACs in a limited-height set-up would have a measurable impact on the efficiency of those units, and that the stringency of the standard level established in ASHRAE Standard 90.1–2019 for this equipment would not correlate to the efficiency of the equipment as tested with the draft test procedure. *Id.* AHRI further asserted that the SCOP to NSenCOP crosswalk would, therefore, not be a direct crosswalk, at least for the up-flow units and for any other products for which ESP test requirements have changed. *Id.*

In response, DOE notes the fact that the clarification mentioned by AHRI regarding the capacity demarcations is appropriately addressed in AHRI 1360–2022.

Regarding the issue of testing up-flow units in a limited-height set-up, DOE surmises that the inclusion of a limited-height approach in the finalized AHRI 1360–2022 that aligns with the approach in AHRI 1360–202X Draft indicates that this limited-height approach represents industry consensus on an appropriate test method. Further, DOE notes that the current Federal test procedure, which references ANSI/ASHRAE 127–2007, does not have any provisions that allow for testing up-flow CRAC units in a limited-height set-up. As such, the crosswalk analysis conducted to translate standards from SCOP to NSenCOP (as presented in the March 2022 ECS NOPR; *see* 87 FR 12802, 12817–12822 (March 7, 2022)) compared SCOP as measured per ANSI/ASHRAE 127–2007 to NSenCOP as measured per AHRI 1360–202X Draft (which is the test procedure DOE proposed to adopt in the February 2022 NOPR). Therefore, the test approaches in any intermediate CRAC industry test procedures released between ANSI/ASHRAE 127–2007 and AHRI 1360–202X Draft (*e.g.,* AHRI 1360–2017 as mentioned by AHRI) are not relevant for DOE's crosswalk analysis, as such intermediate industry test procedures were never proposed or adopted as part of the Federal test procedure.

The CA IOUs provided several recommendations to modify the proposed test procedure. (CA IOUs, No. 6 at p. 6) First, the CA IOUs recommended that DOE adopt the same entering air dry-bulb temperature for all CRAC configurations, asserting that containment, server rack orientation, and room temperature setpoints have much more significant impacts on return air temperature than CRAC configuration; therefore, basing test temperature on CRAC configuration may create arbitrary differences in efficiency representations among CRAC configurations, which would result in a market distortion in favor of some configurations over others. *Id.* Second, the CA IOUs recommended DOE use 86 °F as the full-load condenser entering water temperature, as opposed to 83 °F as prescribed in AHRI 1360–202X Draft, asserting that typically water-cooled CRACs and other water-cooled heating, ventilation, and air conditioning (HVAC) equipment receive condenser water via a water-to-water heat exchanger, and that the 86 °F point takes into account the approach temperature of such a heat exchanger. *Id.* The CA IOUs added that test procedures for three other equipment categories have used 86 °F as the full-load condenser entering water temperature: direct expansion-dedicated outdoor air system units (*i.e.,* AHRI Standard 920–2020), variable refrigerant flow (''VRF'') water-source heat pumps (*i.e.,* AHRI Standard 1230–2021), and water-source heat pumps less than 135,000 Btu/h (*i.e.,* ISO 13256–1:1998) Third, the CA IOUs supported the inclusion of cooling tower/dry cooler fan and heat rejection pump energy in the CRAC efficiency rating, but suggested that DOE examine if the power demand adders of 5 percent and 7.5 percent for water-cooled and glycol-cooled CRACs, respectively, are representative. *Id.*

The Joint Advocates supported the inclusion of a power adder for heat rejection components to improve the representativeness of the test for water-cooled and glycol-cooled CRACs. (Joint Advocates, No. 7 at p. 1) The Joint Advocates encouraged DOE to investigate the representativeness of the proposed entering air dry-bulb temperatures,[14] asserting that it did not appear that DOE has performed a thorough analysis of the representativeness of the proposed temperature values, but was rather simply proposing to adopt the values in AHRI 1360–202X Draft. (Joint Advocates, No. 7 at p. 1) The Joint

[14] In their comment, the Joint Advocates refer to this as ''return air temperature.''

Advocates referenced the March 2022 ECS NOPR, noting that the impact of increasing the entering air dry-bulb temperature from 75 °F to 95 °F for up-flow ducted and down-flow CRACs, led to an increase of net sensible cooling capacity and SCOP by approximately 22 percent and 19 percent, respectively. (Joint Advocates, No. 7 at pp. 1–2) The Joint Advocates commented that given the large potential magnitude of change to the metrics, DOE should scrutinize the appropriateness of updating the entering air dry-bulb temperature values and, if a revision is found to be justified, the representativeness of the proposed entering air dry-bulb temperature values. *Id.*

NEEA recommended that DOE ensure that the required ESP test conditions are representative of actual ESP conditions that units experience in the field. (NEEA, No. 5 at p. 4)

As noted earlier, EPCA requires that the test procedures for commercial package air conditioning and heating equipment be those generally accepted industry testing procedures or rating procedures developed or recognized by 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 update 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)) As discussed in section III.C, DOE has concluded, supported by clear and convincing evidence, that AHRI 1360–2022 would better meet the criterion of EPCA than AHRI 1360–2017. DOE is not aware of any data or information indicating that the entering air dry-bulb temperature or ESP conditions in AHRI 1360–2022 are not representative of an average CRAC use cycle, and commenters did not provide any data or information to contradict this understanding. Therefore, DOE concludes that the rating conditions finalized in AHRI 1360–2022 are appropriate. The following paragraphs include DOE's responses to some of the comments received regarding specific rating conditions in AHRI 1360–202X Draft (and the subsequently finalized AHRI 1360–2022).

Regarding entering air dry-bulb temperature, it is DOE's understanding that CRAC configurations in which the return air inlet is located close to the heat source (*e.g.,* horizontal flow units, which are typically located adjacent to server racks) have higher entering air dry-bulb temperatures than configurations with return air inlets located further from the heat source. Numerous other versions of CRAC industry test procedures (*i.e.,* ANSI/ASHRAE 127–2020, AHRI 1360–2017, and AHRI 1360–2016) also include different entering air dry-bulb temperatures for each configuration that are consistent with AHRI 1360–202X Draft (and the subsequently finalized AHRI 1360–2022). Regarding the comment from Joint Advocates, while DOE agrees that differing entering air dry-bulb temperature values lead to a measurable change in the evaluated metrics for each configuration, DOE also notes that the standards proposed in the March 2022 ECS NOPR are separate for each configuration and reflect the different rating conditions. *See* 87 FR 12802, 12809–12816 (March 7, 2022). Additionally, industry consensus as reflected in AHRI 1360–2022 suggests that using the same entering air dry-bulb temperature for all CRAC configurations would be less representative of an average use cycle for each unique CRAC configuration. Therefore, DOE has concluded that different entering air dry-bulb temperatures for each separate configuration are appropriate for inclusion in the revised test procedure.

Similarly, ESP conditions may differ for CRAC configurations depending on how and where they may be installed. As noted earlier, DOE is not aware of any data or information indicating that the ESP conditions in AHRI 1360–2022 are not representative of an average CRAC use cycle, and NEEA did not provide any data or information to contradict this understanding.

Regarding condenser entering water temperature, ANSI/ASHRAE 127–2007 prescribes a test condition of 86 °F (as suggested by the CA IOUs) for SCOP, but the lower 83 °F condition was adopted in subsequent CRAC industry test procedures—ASHRAE 127–2020, AHRI 1360–2016, and AHRI 1360–2017—in addition to AHRI 1360–202X Draft (and the subsequently finalized AHRI 1360–2022). DOE considers that this decrease in the condenser entering water temperature test condition from 86 °F to 83 °F was made after industry deliberation and represents industry consensus. DOE also notes that not all industry test procedures for other categories of commercial air conditioning and heating equipment are consistent in entering water temperature test conditions, as AHRI Standard 340/360–2022, ''Performance Rating of Commercial and Industrial Unitary Air-conditioning and Heat Pump Equipment,'' specifies an entering water temperature of 85 °F for water-cooled CUACs. Therefore, DOE has concluded that the proposed 83 °F condition as the condenser entering water temperature for water-cooled CRACs is appropriate and would produce the most representative results.

Regarding the power consumption adders for heat rejection components for water-cooled and glycol-cooled CRACs, ANSI/ASHRAE 127–2020, AHRI 1360–2016, and AHRI 1360–2017 also specify the same adders of 5 percent and 7.5 percent for water-cooled and glycol-cooled CRACs as proposed in the February 2022 NOPR. After a careful review, DOE was not able to find any information indicating that these values are not representative for CRAC installations. Therefore, DOE considers these demand adders to be appropriate for CRACs.

In summary, DOE is updating its efficiency metric for CRACs to NSenCOP as measured per AHRI 1360–2022, at appendix E1. Appendix E continues to reference ANSI/ASHRAE 127–2007 and to provide instructions for determining SCOP. As noted earlier, CRACs are not required to be tested according to the test procedure in appendix E1 until such time as compliance is required with an amended energy conservation standard that relies on the NSenCOP metric, should DOE adopt such a standard.

2. Integrated Efficiency Metric

In contrast to an efficiency metric that measures performance at only one test point, an annualized, or ''integrated'' efficiency metric measures performance at multiple test points (*i.e.,* tests with different outdoor test conditions) that are intended to reflect seasonal variation in outdoor ambient temperatures that would be experienced by the equipment installed in the field.

AHRI 1360–2016, AHRI–1360–2017, and AHRI 1360–202X Draft include an integrated efficiency metric—integrated net sensible coefficient of performance (''iNSenCOP''). The iNSenCOP metric comprises a weighted average of NSenCOP values for four test points at different outdoor conditions.[15]

In the February 2022 NOPR, DOE noted that section D1 of AHRI 1360–2017 (and section G1 of the subsequently updated AHRI 1360–202X Draft) states that ''a long-term goal is for iNSenCOP to replace NSenCOP after a more readily testable means has been

[15] The rating conditions A, B, C, and D for iNSenCOP for air-cooled units correspond to outdoor entering air temperatures of 95.0 °F, 80.0 °F, 65.0 °F, and 40.0 °F, respectively.

standardized.'' 87 FR 6948, 6957 (Feb. 7. 2022). DOE indicated that it was not aware of any test data that verify the validity of the iNSenCOP metric and that minimum efficiency levels in terms of iNSenCOP have not been adopted in ASHRAE Standard 90.1. *Id.* DOE acknowledged the potential benefit regarding representativeness that would be provided with an annualized metric for CRACs but concluded that given the apparent need for further validation and the lack of test data, DOE was unable to propose to use the iNSenCOP metric at this time. *Id.*

The Joint Advocates and NEEA encouraged DOE to continue to investigate an annualized metric for CRACs. (Joint Advocates, No. 7 at p. 2; NEEA, No. 5 at pp. 1–2) The Joint Advocates commented that CRACs are designed to provide year-round cooling at a stable indoor cooling load and that an annualized metric that reflects an integrated measure of CRAC performance at different outdoor temperatures would be more representative of the efficiency of this equipment. (Joint Advocates, No. 7 at p. 2) NEEA commented that it supports DOE's proposal to use NSenCOP instead of SCOP, but encouraged DOE to conduct the research required to transition to the iNSenCOP metric, which NEEA asserted better accounts for the energy efficiency of CRACs given that it provides a standardized evaluation of the annualized cooling energy consumption of a unit operated across the specified range of outdoor ambient temperatures. (NEEA, No. 5 at pp. 1–2) NEEA commented that it believed integrating a part-load operation assessment was also feasible when this efficiency metric is adopted for CRACs in the future. *Id.*

As noted in the February 2022 NOPR, DOE acknowledges the potential benefit regarding representativeness that would be provided with an annualized, integrated metric for CRACs. However, given the need for further validation and the lack of test data, DOE is not adopting the iNSenCOP metric at this time.

3. Part-Load Operation and Air Circulation Mode

In the July 2017 ASHRAE TP RFI, DOE noted that CRACs typically operate at part-load (*i.e.,* less than designed full cooling capacity) in the field. 82 FR 34427, 34432 (July 25, 2017). DOE discussed that the reasons for this may include, but are not limited to, redundancy in installed units to prevent server shutdown if a CRAC unit stops working, and server room designers building in extra cooling capacity to accommodate additional server racks in the future. *Id.* DOE also noted that while the current DOE test procedure measures performance at full-load, DOE has estimated that CRACs operate on average at a sensible load of 65 percent of the full-load sensible capacity.[16] *Id.*

Comments received in response to the July 2017 ASHRAE TP RFI and discussed in the February 2022 NOPR also suggested that CRACs are commonly oversized when installed in the field, and that this oversizing can significantly influence performance. 87 FR 6948, 6958 (Feb. 7, 2022). Additionally, in the February 2022 NOPR, DOE noted it understands that many CRACs operate in air circulation mode and that incorporating air circulation mode in testing might incentivize use of more-efficient fan technologies for CRACs that typically operate at lower fan speeds in air circulation mode. *Id.* However, DOE did not have information or data on part-load or air circulation mode operation of CRACs to support a proposal to amend the efficiency metric to account for performance in these operating modes. *Id.*

In response to the February 2022 NOPR, NEEA encouraged DOE to gather more data on the conditions and the percentage of time when CRACs typically operate in air circulation mode, noting that this information will help ensure that DOE's metric for CRACs is representative of average annual operation, which includes accounting for energy consumption in these modes. (NEEA, No. 5 at p. 2) Similarly, NEEA commented that it believes that incorporating part-load performance in the efficiency metric for CRACs would encourage the adoption of technologies that improve performance, such as variable-speed fans and compressors. (NEEA, No. 5 at pp. 2–3) NEAA asserted that incorporating part-load and air-circulation modes into efficiency ratings would give consumers better information about the performance of different CRAC units. (NEEA, No. 5 at p. 3) NEEA agreed with DOE's statement that there is a lack of information and data on part-load or air-circulation-mode operation of CRACs, but the commenter recommended that DOE conduct more research to collect the necessary data to amend the proposed efficiency metric. *Id.*

The Joint Advocates encouraged DOE to capture the part-load operation and air-circulation-mode operation of CRACs. (Joint Advocates, No. 7 at p. 2) The Joint Advocates asserted that the CRAC test procedure for determining NSenCOP is not representative of an average use cycle because many CRACs operate in part-load and air-circulation mode, and fan energy is not accounted for in the NSenCOP metric. *Id.*

The CA IOUs commented that CRACs operate at part load at nearly all times, so efficient part-load performance is more important than full-load performance for optimal energy use. (CA IOUs, No. 6 at p. 7) The CA IOUs referenced studies conducted by PG&E, which they commented indicate that data centers are typically operated at part load to ensure maximum temperature and humidity control stability, reliability, and margin for future load increases. *Id.* The CA IOUs suggested that instead of adopting a part-load performance rating requirement at this time, DOE should consider requiring manufacturers to state the temperature at which capacity control becomes unstable and when the CRAC cannot operate within acceptable test capacity tolerance, and that this information would allow designers to evaluate the suitability of the part-load performance of different equipment options for specific applications. *Id.*

These comments suggest that many CRACs operate in part load and in air-circulation mode and that incorporating these modes in testing could lead to a more representative test procedure. However, CRAC operation in these operating modes has not been addressed in any CRAC industry consensus test procedures. At this time, DOE does not have enough information or data on part-load or air-circulation mode operation of CRACs to support amending the efficiency metric to account for performance in these operating modes. Regarding CA IOUs' suggestion to require manufacturers to state the temperature at which capacity control becomes unstable, DOE has concluded that such provisions do not apply for testing to a full-load metric, which does not involve modulation of capacity below full-load. Because the Department is not adopting a part-load metric in this final rule, DOE is correspondingly not adopting the CA IOU's suggestion.

4. Controls Verification Procedure

Neither the current Federal test procedure nor AHRI 1360–2022 incorporates a controls verification procedure (''CVP'') for CRACs. The purpose of a CVP is to validate that the

[16] *See* the analysis for a final rule for standards and test procedures for certain commercial heating, air conditioning, and water heating equipment (including CRACs) published in the **Federal Register** on May 16, 2012 (77 FR 28928). (Technical Support Document, EERE–2011–BT–STD–0029–0021, pp. 4–15, 4–16)

observed positions of critical parameters for modulating components during the CVP are within tolerance of the certified critical parameter values in the supplementary test instructions (''STI'') that are set by the manufacturer in steady-state tests. This ensures that the measured results of the test procedure are based on critical parameter settings that are representative of critical parameter behavior that would be experienced in the field.

In response to the February 2022 NOPR, NEEA commented that CRACs could benefit from a CVP and that a CVP would help ensure that manufacturer claims of energy savings from controls are accurate and can help verify that units are achieving the variable-speed benefits that are claimed. (NEEA, No. 5 at p. 3) NEEA noted that there is precedence for including a CVP in commercial HVAC products, such as VRF multi-split air conditioners and heat pumps. *Id.* NEEA further commented that a CVP may also check and test the energy savings from economizers, given that they are not a component of the proposed test procedure for basic CRAC models, and that incorporating a CVP is one potential way to capture those energy saving benefits for CRAC units that have an economizer. *Id.*

As noted, AHRI 1360–2022, the industry standard that DOE is adopting in this final rule, does not include a CVP for CRACs. Further, DOE is not aware of any industry test procedures that include a CVP that would apply for CRACs. While DOE understands that there may be potential benefits of implementing a CVP for CRACs and acknowledges the precedent of a CVP for other commercial equipment such as VRF multi-split systems, DOE understands that the market penetration of variable-speed CRAC equipment is much smaller than for VRF multi-split systems. Given that DOE is not aware of an established CVP for CRAC nor any test data that could support adopting such a CVP, DOE is not adopting a CVP for CRACs in this final rule.

F. Configuration of Unit Under Test

1. Background and Summary

CRACs are sold with a wide variety of components, including many that can optionally be installed on or within the unit both in the factory and in the field. In all cases, these components are distributed in commerce with the CRAC, but can be packaged or shipped in different ways from the point of manufacture for ease of transportation. Some optional components may affect a model's measured efficiency when tested to the DOE test procedure adopted in this final rule, and others may not. DOE is handling CRAC components in two distinct ways in this final rule to help manufacturers better understand their options for developing representations for their differing product offerings.

First, the treatment of some components is specified by the test procedure to limit their impact on measured efficiency. For example, a fire/smoke/isolation damper must be set in the closed position and sealed during testing, resulting in a measured efficiency that would be similar or identical to the measured efficiency for a unit without a fire/smoke/isolation damper.

Second, for certain components not directly addressed in the DOE test procedure, this final rule provides more specific instructions on how each component should be handled for the purposes of making representations in 10 CFR part 429. Specifically, these instructions provide clarity to manufacturers on how components should be treated and how to group individual models with and without optional components for the purposes of representations, in order to reduce burden. DOE is adopting these provisions in 10 CFR part 429 to allow for testing of certain individual models that can be used as a proxy to represent the performance of equipment with multiple combinations of components. DOE is adopting provisions expressly allowing certain models to be grouped together for the purposes of making representations and allowing the performance of a model without certain optional components to be used as a proxy for models with any combinations of the specified components, even if such components would impact the measured efficiency of a model. Steam/hydronic heat coils are an example of such a component. The efficiency representation for a model with a steam/hydronic heat coil is based on the measured performance of the CRAC as tested without the component installed because the steam/hydronic heat coil is not easily removed from the CRAC for testing.[17]

2. Approach for Exclusion of Certain Components

a. Proposals

Appendix D of AHRI 1360–2022 (and Appendix D of AHRI 1360–202X Draft) provides discussion of components which would not be considered in representations, and provides instructions either to neutralize their impact during testing or for determining representations for individual models with such components based on other individual models that do not include them.

Instead of referencing Appendix D of AHRI 1360–202X Draft, DOE tentatively determined in the February 2022 NOPR that it would be necessary to include related provisions in the proposed appendix E1 test procedure and in the proposed representation requirements at 10 CFR 429.43. 87 FR 6948, 6964 (Feb. 7. 2022). DOE noted that this revised approach would provide more detailed direction and clarity between test procedure provisions (*i.e.,* how to test a specific unit) and certification and enforcement provisions (*e.g.,* which model(s) to test). *Id.* Specifically, DOE proposed to include provisions for certain specific components to limit their impact on measured efficiency during testing. 87 FR 6948, 6981 (Feb. 7, 2022). Additionally, DOE proposed representation requirements in 10 CFR 429.43(a)(4) that explicitly allowed representations for individual models with certain components to be based on testing for individual models without those components. The proposal included a table listing the components for which these provisions would apply: air economizers, process heat recovery/reclaim coils/thermal storage, evaporative pre-cooling of air-cooled condenser intake air, steam/hydronic heat coils, refrigerant reheat coils, powered exhaust/powered return air fans, compressor variable frequency drive (''VFD''), fire/smoke/isolation dampers, non-standard indoor fan motors, humidifiers, flooded condenser head pressure controls, chilled water dual cooling coils, and condensate pump. 87 FR 6948, 6974–6975 (Feb. 7. 2022). Finally, DOE proposed specific product enforcement provisions in 10 CFR 429.134 indicating that DOE would conduct enforcement testing on individual models that do not include the components listed in the aforementioned table, except in certain enumerated circumstances. 87 FR 6948, 6977 (Feb. 7. 2022).

b. General Comments

AHRI generally supported DOE's proposals and agreed with the approach to include the optional features provisions in the test procedure directly and remove them from DOE's

[17] Note that in certain cases, as explained further in section III.F.2.c of this document, the representation may have to be based on an individual model with a steam/hydronic coil.

Commercial HVAC Enforcement Policy.[18] (AHRI, No. 9 at p. 6)

In this final rule, DOE is adopting its proposals in the February 2022 NOPR regarding the exclusion of certain components, with some additional simplifications to further improve clarity. The different aspects of the provisions are described in the following sections.

c. Test Provisions Within Appendix E1

DOE is adopting test provisions in section 4 of appendix E1 to prescribe how certain components must be configured for testing, as proposed in the February 2022 NOPR. Specifically, DOE is requiring in appendix E1 that steps be taken during unit set-up and testing to limit the impacts on the measurement of these components:

- Air economizers
- Process heat recovery/reclaim coils/thermal storage
- Evaporative pre-cooling of condenser intake air
- Steam/hydronic heat coils
- Refrigerant reheat coils
- Fire/smoke/isolation dampers
- Harmonic distortion mitigation devices
- Humidifiers
- Electric reheat elements
- Non-standard power transformer
- Chilled water dual cooling coils
- High-effectiveness indoor air filtration

The components are listed and described along with their corresponding test provisions in Table 4.1 in section 4 of the new appendix E1.

In response to the February 2022 NOPR, AHRI suggested the inclusion of provisions for four specific components (*i.e.,* harmonic distortion mitigation devices, humidifiers, non-standard power transformers, and chilled water coils) to limit their impact on measured efficiency during testing. (AHRI, No. 9 at pp. 6–7) For harmonic distortion mitigation devices and non-standard power transformers, AHRI commented that these components cannot be removed for testing and that AHRI will consider including relevant provisions in the finalized version of AHRI 1360–202X Draft. For humidifiers and chilled water coils, AHRI commented that these should be de-energized and removed from testing, respectively. *Id.*

For humidifiers and chilled water coils, appendix E1 (as proposed in the February 2022 NOPR) includes provisions consistent with AHRI's suggestions. For harmonic distortion mitigation devices and non-standard power transformers, AHRI 1360–2022 does not provide any further guidance on these components as AHRI's comment indicated. In the absence of any suggested alternative provisions, DOE has concluded that the provisions that were proposed for testing with these components in appendix E1 in the February 2022 NOPR are appropriate for the CRAC test procedure. Therefore, DOE is adopting the appendix E1 provisions for these components as proposed.

d. Representation Provisions Within 10 CFR 429.43

As discussed, in the February 2022 NOPR, DOE proposed representation requirements in 10 CFR 429.43(a)(4) that explicitly allowed representations for individual models with certain components to be based on testing for individual models without those components. The proposal included a table [19] listing the components for which these provisions would apply (*i.e.,* air economizers, process heat recovery/reclaim coils/thermal storage, evaporative pre-cooling of air-cooled condenser intake air, steam/hydronic heat coils, refrigerant reheat coils, powered exhaust/powered return air fans, compressor VFD, fire/smoke/isolation dampers, non-standard indoor fan motors, humidifiers, flooded condenser head pressure controls, chilled water dual cooling coils, and condensate pump). 87 FR 6948, 6974–6975 (Feb. 7, 2022).

In this final rule, DOE is making two clarifications to the representation requirements as proposed in the February 2022 NOPR.

First, DOE is specifying that the basic model representation must be based on the least-efficient individual model that is a part of the basic model, and clarifying how this long-standing basic model provision interacts with the component treatment in 10 CFR 429.43 that this final rule adopts. Adoption of this clarification in the regulatory text is consistent with the February 2022 NOPR, in which DOE noted that in some cases, individual models may include more than one of the specified components or there may be individual models within a basic model that include various versions of the specified components that result in more or less energy use. 87 FR 6948, 6965 (Feb. 7, 2022). In such cases, DOE stated that the represented values of performance must be representative of the individual model with the lowest efficiency found within the basic model. *Id.*

DOE has determined that regulated entities may benefit from clarity in the regulatory text as to how the least-efficient individual model within a basic model provision is applied with the additional component-specific instructions for CRACs. The amendments in this final rule explicitly state that the exclusion of the specified components from consideration in determining basic model efficiency in certain scenarios is an exception to basing representations on the least-efficient individual model within a basic model. In other words, the components listed in 10 CFR 429.43 are not being considered as part of the representation under DOE's regulatory framework if certain conditions are met as discussed in the following paragraphs, and, thus, their impact on efficiency is not reflected in the representation. In this case, the basic model's representation is generally determined by applying the testing and sampling provisions to the least-efficient individual model in the basic model that does not have a component listed in 10 CFR 429.43.

Second, DOE is also clarifying instructions for determining the unit used for basic model representation to resolve instances where individual models within a basic model may have more than one of the specified components and there may be no individual model without any of the specified components. DOE is adopting the concept of an ''otherwise comparable model group'' (''OCMG'') instead of using the ''otherwise identical'' provisions proposed in the February 2022 NOPR. 87 FR 6948, 6964–6965 (Feb. 7, 2022). DOE is using the term ''comparable'' as opposed to ''identical'' to indicate that components that impact energy consumption as measured by the applicable test procedure are the relevant components to consider for the purpose of representations. Differences that do not impact energy consumption, such as unit color and presence of utility outlets, would, therefore, not warrant separate OCMGs. DOE developed and placed in the docket a document of examples to illustrate the approach in this final rule for determining represented values for CRACs with specific components, and in particular the OCMG concept. *See* EERE–2021–BT–TP–0017–0010.

[18] On January 30, 2015, DOE issued a Commercial HVAC Enforcement Policy addressing the treatment of specific features during DOE testing of commercial HVAC equipment. (*See www.energy.gov/gc/downloads/commercial-equipment-testing-enforcement-policies.*)

[19] In the February 2022 NOPR, this table was referred to as ''Table 1''; however, due to the publication of other test procedure actions subsequent to the February 2022 NOPR, this final rule refers to this table as ''Table 5 to paragraph (a)(3)(iv)(A)—Specific Components for Computer Room Air Conditioners'' of 10 CFR 429.43.

An OCMG is a group of individual models within the basic model that do not differ in components that affect energy consumption as measured according to the applicable test procedure other than the specific components listed in Table 5 of 10 CFR 429.43(a)(3)(iv)(A) (''Table 5 of § 429.43''). An OCMG may include individual models with any combination of such specified components, including no specified components, and an OCMG can be comprised of one individual model. Because every model within each OCMG is within the definition of the basic model, a basic model can be composed of multiple OCMGs. Each OCMG represents a unique combination of components that affect energy consumption, as measured according to the applicable test procedure, other than the specified components listed in Table 5 of § 429.43; this means that a new combination of such components represents a new OCMG. For example, a manufacturer might include two tiers of control system within the same basic model, in which one of the control systems has sophisticated diagnostics capabilities that require a more powerful control board with a higher wattage input. CRAC individual models with the ''standard'' control system would be part of OCMG A, while individual models with the ''premium'' control system would be part of a different OCMG B, since the control system is a component that affects energy consumption and is not one of the specified exempt components listed in Table 5 of § 429.43. However, OCMG A and OCMG B both may include individual models with different combinations of steam/hydronic coils, harmonic distortion mitigation devices, and humidifiers, for example. Both OCMGs may also include any combination of characteristics that do not affect the efficiency measurement, such as paint color.

The OCMG is used to identify which individual models are used to determine a represented value for the basic model. Specifically, only the individual model(s) with the least number (which could be zero) of the specific components listed in Table 5 of § 429.43 is considered when identifying the individual model. This clarifies which individual models are exempted from consideration for determination of represented values in the case of an OCMG with multiple specified components and no individual models with zero specific components listed in Table 5 of § 429.43. Models with a number of specific components listed in Table 5 greater than the model(s) with the least number in the OCMG are exempted from consideration. In the case that the OCMG includes an individual model with no specific components listed in Table 5 of § 429.43, then all individual models in the OCMG with any specified components would be excluded from consideration. Among the remaining non-excluded models, the least efficient individual model across the OCMGs would be used to determine the representation of the basic model. In the case where there are multiple individual models within a single OCMG with the same non-zero least number of specified components, the least efficient of these would be considered.

The use of the OCMG concept results in representations being based on the same individual models as the approach proposed in the February 2022 NOPR, *i.e.,* the represented values of performance are representative of the individual model(s) with the lowest efficiency found within the basic model, excluding certain individual models with the specific components listed in Table 5 of § 429.43. However, the approach as adopted in this final rule is structured to more explicitly address individual models with more than one of the specific components listed in Table 5 of § 429.43, as well as instances in which there is no comparable model without any of the specified components.

Finally, DOE notes that use of the OCMG concept for CRACs is consistent with the approach finalized by DOE in test procedure final rules for direct expansion-dedicated outdoor air systems (*see* 87 FR 45164 (July 27, 2022)) [20] and single package vertical units (*see* 87 FR 75144 (Dec. 7, 2022),[21] and proposed in a test procedure NOPR for water-source heat pumps (*see* 87 FR 53302 (August 30, 2022)).[22]

In response to the February 2022 NOPR, AHRI suggested that DOE should include in appendix E six additional components (coated coils, sound traps/sound attenuators, indoor or outdoor fans with VFD, compressor VFD, evaporative pre-cooling of condenser intake air, and hot gas bypass) at 10 CFR 429.134; AHRI commented that these components were included in the Commercial HVAC Enforcement Policy. (AHRI, No. 9 at pp. 6–7)

In response, DOE notes that none of these six components are specified for CRACs in the Commercial HVAC Enforcement Policy. However, AHRI 1360–202X Draft (and the subsequently finalized AHRI 1360–2022) includes three of the components—compressor VFD, evaporative pre-cooling of condenser intake air, and coated coils—as optional features for CRACS. In the February 2022 NOPR, DOE tentatively concluded that it was appropriate to consider inclusion of compressor VFD and evaporative pre-cooling of condenser intake air as optional features, and the Department proposed provisions for these features at 10 CFR 429.43. 87 FR 6948, 6975 (Feb. 7, 2022). Correspondingly, in this final rule DOE is including these two components as specific components listed in Table 5 of § 429.43.

Regarding sound traps/sound attenuator, indoor or outdoor fans with VFD, and hot gas bypass, DOE notes that these components are not included in AHRI 1360–202X Draft (and the subsequently finalized industry consensus test procedure AHRI 1360–2022). Further, DOE notes that AHRI did not provide any rationale as to the need for including these components as specific components in Table 5 of § 429.43. Additionally, these components are not included for CRACs in the Commercial HVAC Enforcement Policy. Therefore, DOE has concluded that it has no basis to include these components as specific components listed in Table 5 of § 429.43.

Regarding coated coils, in the February 2022 NOPR, DOE proposed to exclude coated coils from the specific components list specified in 10 CFR 429.43 because DOE tentatively concluded that the presence of coated coils does not result in a significant impact to performance of CRACs, and, therefore, that models with coated coils should be rated based on performance of models with coated coils. 87 FR 6948, 6965 (Feb. 7, 2022). As discussed, DOE received comments from AHRI in response to the February 2022 NOPR that DOE should consider including coated coils in the list of specific components for CRACs at 10 CFR 429.134. DOE also received similar comments pertaining to coated coils in response to other commercial HVAC equipment test procedure NOPRs, specifically the test procedure supplemental notice of proposed

[20] *See also* ''Direct Expansion Dedicated Outdoor Air Systems (DX–DOAS) Illustration of Specified Components Requirements Presentation'' (available at: *www.regulations.gov/document/EERE-2017-BT-TP-0018-0038*).

[21] *See also* ''Single Package Vertical Units (SPVU) Illustration of Specified Components Requirements, November 2022'' (available at: *www.regulations.gov/document/EERE-2017-BT-TP-0020-0025*).

[22] *See also* ''Water Source Heat Pumps (WSHP) Illustration of Specified Components Requirements, Test Procedure NOPR—August 2022'' (available at: *www.regulations.gov/document/EERE-2017-BT-TP-0029-0013*).

rulemaking (''SNOPR'') published for direct expansion-dedicated outdoor air systems (''DX–DOASes'').[23] (Docket No. EERE–2017–BT–TP–0018, AHRI, No. 34 at p. 4) In response to the DX–DOAS SNOPR, AHRI and Madison Indoor Air Quality (''MIAQ'') asserted that some coated coils impact performance, but that each coating is different. (Docket No. EERE–2017–BT–TP–0018, AHRI, No. 34 at p. 4; MIAQ, No. 29 at p. 4)

AHRI's and MIAQ's assertions that some coated coils do impact energy use suggest that there are other implementations of coated coils that do not impact energy consumption as measured by the adopted test procedure (*i.e.,* the implementation of coated coils does not necessarily or inherently impact energy use). DOE has no data indicating the range of impacts for those coatings that do affect energy use, or how other characteristics of the coatings, such as durability and cost, correlate with energy use impacts. Absent such data, DOE is unable to determine the specific range of impacts on energy use made by coated coils. Nevertheless, given that comments on the DX–DOAS SNOPR suggest that certain implementations of coated coils do not impact energy use, DOE has determined that for those units for which coated coils do impact energy use, representations should include those impacts, thereby providing full disclosure for commercial customers. Consequently, DOE is not incorporating coated coils into DOE's provisions specified in 10 CFR 429.43(a)(3) that allow for the exclusion of specified components when determining represented values for CRACs. This approach is consistent with the one DOE has established in a final rule for the DX–DOAS test procedure. 87 FR 45164, 45186 (July 27, 2022).

e. Enforcement Provisions Within 10 CFR 429.134

In the February 2022 NOPR, DOE sought to address CRACs that include components specified in 10 CFR 429.43(a)(4)(i) both in the requirements for representations (*i.e.,* 10 CFR 429.43) and in the equipment-specific enforcement provisions for assessing compliance (*i.e.,* 10 CFR 429.134). 87 FR 6948, 6975–6977 (Feb. 7, 2022). DOE received no comments on this topic.

Instructions on which units to test for the purpose of representations are addressed in 10 CFR 429.43. Consequently, DOE has determined that including parallel enforcement provisions in 10 CFR 429.134 would be redundant and potentially cause confusion because DOE would select for enforcement only those individual models that are the basis for making basic model representations as specified in 10 CFR 429.43. Therefore, in this final rule, DOE is providing the requirements for making representations of CRACs that include the specified components in 10 CFR 429.43 and is not including parallel direction in the enforcement provisions of 10 CFR 429.134 established in this final rule. However, DOE is finalizing the provision that allows enforcement testing of alternative individual models with specific components, if DOE cannot obtain for test the individual models without the components that are the basis of representation.

3. Non-Standard Indoor Fan Motors

The Commercial HVAC Enforcement Policy includes high-static indoor blowers/oversized motors as an optional feature for CRACs, among other equipment. The Commercial HVAC Enforcement Policy states that when selecting a unit of a basic model for DOE-initiated testing, if the basic model includes a variety of high-static indoor blowers or oversized motor options,[24] DOE will test a unit that has a standard indoor fan assembly (as described in the STI that is part of the manufacturer's certification, including information about the standard motor and associated drive that was used in determining the certified rating). This policy only applies where: (a) the manufacturer distributes in commerce a model within the basic model with the standard indoor fan assembly (*i.e.,* standard motor and drive), and (b) all models in the basic model have a motor with the same or better relative efficiency performance as the standard motor included in the test unit, as described in a separate guidance document discussed subsequently. If the manufacturer does not offer models with the standard motor identified in the STI or offers models with high-static motors that do not comply with the comparable efficiency guidance, DOE will test any indoor fan assembly offered for sale by the manufacturer.

DOE subsequently issued a draft guidance document (''Draft Commercial HVAC Guidance Document'') on June 29, 2015 to request comment on a method for comparing the efficiencies of a standard motor and a high-static indoor blower/oversized motor.[25] As presented in the Draft Commercial HVAC Guidance Document, the relative efficiency of an indoor fan motor would be determined by comparing the percentage losses of the standard indoor fan motor to the percentage losses of the non-standard (oversized) indoor fan motor. The percentage losses would be determined by comparing each motor's wattage losses to the wattage losses of a corresponding reference motor. Additionally, the draft method contains a table that includes a number of situations with different combinations of characteristics of the standard motor and oversized motor (*e.g.,* whether each motor is subject to Federal standards for motors, whether each motor can be tested to the Federal test procedure for motors, whether each motor horsepower is less than one) and specifies for each combination whether the non-standard fan enforcement policy would apply (*i.e.,* whether DOE would not test a model with an oversized motor, as long as the relative efficiency of the oversized motor is at least as good as performance of the standard motor). DOE has not issued a final guidance document and is instead addressing the issue for CRACs in this test procedure rulemaking.

In the February 2022 NOPR, DOE noted that the approaches in section D3 of AHRI 1360–202X Draft for non-standard indoor fan motors and integrated fan and motor combinations (''IFMs'') generally align with the approaches of the Commercial HVAC Enforcement Policy and the Draft Commercial HVAC Guidance Document, while providing greater detail and accommodating a wider range of fan motor options. 87 FR 6948, 6966 (Feb. 7, 2022). DOE also tentatively determined that section D3 of Appendix D of AHRI 1360–202X Draft would more fully provide the guidance intended by the Commercial HVAC Enforcement Policy with regard to non-standard indoor fan motors. *Id.* DOE proposed to adopt the provisions in section D3 of AHRI 1360–202X Draft for comparing the performance of standard and non-standard indoor fan motors and IFMs in the proposed appendix E1.[26] *Id.*

[23] *See* 86 FR 72874 (Dec. 23, 2021).

[24] The Commercial HVAC Enforcement Policy defines ''high-static indoor blower or oversized motor'' as an assembly that drives the fan and can deliver higher external static pressure than the standard indoor fan assembly sold with the equipment.

[25] Available at *www1.eere.energy.gov/buildings/appliance_standards/pdfs/draft-commercial-hvac-motor-faq-2015-06-29.pdf.*

[26] Per DOE's existing certification regulations, if a manufacturer were to use the proposed approach to certify a basic model, the manufacturer would be required to maintain documentation of how the relative efficiencies of the standard and non-standard fan motors or the input power of the standard and non-standard IFMs were determined, as well as the supporting calculations. *See* 10 CFR 429.71.

Additionally, DOE proposed to adopt the provisions in section D3 of Appendix D of AHRI 1360–202X Draft for the determination of the represented efficiency value of CRACs at 10 CFR 429.43(a)(3)(v)(C) and for DOE assessment and enforcement testing of CRACs at 10 CFR 429.134(s)(1). *Id.*

In commenting on this issue, AHRI stated support for maintaining enforcement policy guidance even if such guidance moves to the test procedure provisions, and that for future adoption, AHRI would support provisions included in section D3 of Appendix D of 1360–202X Draft. (AHRI, No. 9 at p. 7)

In the February 2022 NOPR, the Department proposed provisions (referencing section D3 of AHRI 1360–202X Draft) regarding non-standard indoor fan motors in the proposed 10 CFR 429.43(a)(3), which addresses representation requirements for CRACs, rather than in the DOE test procedure (*i.e.,* appendix E1). Section D2 of AHRI 1360–2022 includes the same provisions as those present in AHRI 1360–202X Draft. DOE has concluded that maintaining provisions in both enforcement guidance and DOE regulations would be redundant, and that including provisions in DOE regulations provides better clarity to stakeholders. For the reasons discussed in the preceding paragraphs and the February 2022 NOPR, DOE is finalizing its proposals regarding non-standard indoor fan motors as proposed in the February 2022 NOPR.

G. Represented Values

1. Multiple Refrigerants

In the February 2022 NOPR, DOE noted that some commercial package air conditioning and heating equipment may be sold with more than one refrigerant option, and that DOE has identified at least one CRAC manufacturer that provides two refrigerant options under the same model number. 87 FR 6948, 6967 (Feb. 7, 2022). DOE stated that the use of a refrigerant (such as R–407C as compared to R–410A) that requires different hardware (*i.e.,* compressors, heat exchangers, or air moving systems that are not the same or comparably performing) would represent a different basic model, and according to current DOE regulations, separate representations of energy efficiency are required for each basic model under 10 CFR 429.43(a). *Id.* DOE also noted that some refrigerants (such as R–422D and R–427A) would not require different hardware, and a manufacturer may consider them to be the same basic model. *Id.* In the February 2022 NOPR, DOE proposed and requested comment specifying that a manufacturer must determine the represented values for that basic model based on the refrigerant(s)—among all refrigerants listed on the unit's nameplate—that result in the lowest cooling efficiency. *Id.*

AHRI supported the concept of DOE's proposal regarding representations for CRAC models approved for use with multiple refrigerants. (AHRI, No. 9 at p. 7) The CA IOUs also supported DOE's proposal to require only ratings for the worst-performance refrigerant for a given basic model and noted that this approach is consistent with DOE's policy for other HVAC equipment. (CA IOUs, No. 6 at p. 7) However, the CA IOUs recommended that DOE allow manufacturers to report test results of the same basic model with multiple refrigerants, stating that this would highlight equipment with the same hardware that can be operated with better-performing refrigerants. *Id.* The CA IOUs commented that commercial refrigeration equipment uses more than one refrigerant for rating, and that DOE allows representations using multiple refrigerants for consumer central air conditioners and heat pumps. *Id.*

As discussed in section III.F.2 of this final rule, DOE is generally clarifying in 10 CFR 429.43(a)(3)(iv)(A) that representations for a CRAC basic model must be based on the least-efficient individual model(s) distributed in commerce within the basic model (with the exception specified in 10 CFR 429.43(a)(3)(iv)(A) for certain individual models with the components listed in Table 5 to 10 CFR 429.43(a)(3); this list does not include different refrigerants). Therefore, upon further consideration, DOE has determined that the content of the proposal in the February 2022 NOPR regarding multiple refrigerants (which would have required representations based on the least-efficient refrigerant) is already included and clarified in the provision adopted at 10 CFR 429.43(a)(3)(iv)(A) (which require representations based on the least-efficient individual model (and thus also the least-efficient refrigerant), with the exception mentioned earlier in this paragraph), and that the refrigerant-specific provisions proposed in the February 2022 NOPR at 10 CFR 429.43(a)(3) would be redundant. As such, in this final rule, DOE is not adopting the refrigerant-specific language proposed in the February 2022 NOPR.

Regarding the CA IOU's comment requesting provision allowing additional representations within a basic model for different refrigerants, DOE has concluded that because the efficiency of the CRAC could be impacted by different refrigerant choices, the least-efficient individual model requirement necessitates consideration of the least-efficient refrigerant when determining represented values for that basic model. Therefore, DOE is not adopting the CA IOUs' suggestion to allow representations for multiple refrigerants within a single basic model, because it would be inconsistent with the Department's adopted requirement that the represented values for a basic model be based on the least-efficient individual model.

2. Net Sensible Cooling Capacity

For CRACs, net sensible cooling capacity (''NSCC'') determines equipment class, which in turn determines the applicable energy conservation standard. 10 CFR 431.97. In the February 2022 NOPR, DOE noted that while NSCC is a required represented value for CRACs, DOE does not currently specify provisions for CRACs regarding how close the represented value of NSCC must be to the tested or alternative energy-efficiency determination method (''AEDM'') simulated NSCC, or whether DOE will use measured or certified NSCC to determine equipment class for enforcement testing. 87 FR 6948, 6967 (Feb. 7, 2022). DOE proposed to add to its regulations the following provisions regarding NSCC for CRACs: (1) a requirement that the represented NSCC be between 95 percent and 100 percent of the tested or AEDM-simulated cooling capacity; and (2) an enforcement provision stating that DOE would use the mean of measured NSCC values from testing, rather than the certified cooling capacity, to determine the applicable standards. *Id.*

AHRI expressed support for DOE's proposal that the represented NSCC be between 95 percent and 100 percent of the tested or AEDM-simulated cooling capacity. (AHRI, No. 9 at p. 8) However, AHRI opposed DOE's proposed enforcement provision of using the mean of measured NSCC values from testing to determine the applicable standards, rather than the certified NSCC, stating that this is a deviation from the current requirement that DOE conduct statistical averaging of three units to confirm published capacity, and that this proposal was presented without supporting evidence necessary to make the change. *Id.* AHRI recommended that DOE apply enforcement provisions similar to those for packaged terminal air conditioners

(''PTACs''), which specify in paragraph (e) of 10 CFR 429.134 that if the certified cooling capacity is found to be ''valid'' based on the 5-percent allowance to the tested mean, the reported certified value of cooling capacity is used in the next steps of decision making rather than just the mean itself. *Id.* AHRI noted that this 5-percent allowance is also currently provided for portable air conditioners, water heaters, and dehumidifiers. AHRI stated that using just the mean of the measurement(s) to determine the applicable standard with which the model must comply is too restrictive and does not follow precedence set by similar products. *Id.*

In response, DOE acknowledges that the enforcement provisions for PTACs specified at 10 CFR 429.134(e) are different than those specified for CUACs at 10 CFR 429.134(g) (which are consistent with the provisions proposed for CRACs). However, the efficiency standards for PTACs are linearly variable with capacity (*i.e.,* a change in PTAC capacity changes the minimum efficiency required). This relationship between capacity and the applicable standard justifies DOE's approach for PTACs to use the reported certified value of cooling capacity if the certified cooling capacity is found to be within tolerance. In contrast, the energy conservation standards for CRACs are based on equipment classes that are differentiated based on fixed-capacity thresholds (*i.e.,* no linear relationship between capacity and the applicable standard). As noted, the proposed provisions for CRACs are consistent with the current enforcement provisions for CUACs at 10 CFR 429.134(g), which have similar capacity thresholds for equipment classes and also have fixed efficiency standards within each class. To maintain consistency with the approach used for other similarly situated commercial air conditioning and heating equipment with equipment classes based on fixed-capacity thresholds, DOE is adopting the enforcement provisions specifying that DOE would use the mean of measured cooling capacity values from testing to determine the applicable standards.

3. Validation Class for Glycol-Cooled CRACs

DOE's existing testing regulations allow the use of an AEDM, in lieu of actual testing, to simulate the efficiency of CRACs. 10 CFR 429.43(a). In the AEDM requirements for CRACs in 10 CFR 429.70, the table itemizing validation classes for commercial HVAC equipment inadvertently omits glycol-cooled CRACs, which DOE understands to be similar in design to water-cooled CRACs. To address this, in the February 2022 NOPR, DOE proposed to include glycol-cooled CRACs in the existing validation class for water-cooled CRACs at 10 CFR 429.70(c)(2)(iv). 87 FR 6948, 6968 (Feb. 7, 2022). Specifically, DOE proposed at 10 CFR 429.70(c)(2)(iv) that the minimum number of distinct water-cooled and/or glycol-cooled models that must be tested per AEDM would be two basic models, which aligns with the ''two basic model'' requirement that currently applies to the water-cooled CRACs validation class. *Id.*

DOE did not receive any comments regarding this proposal, and for the reasons discussed in the preceding paragraph and the February 2022 NOPR, DOE is adopting this change as proposed.

H. Effective and Compliance Dates

As noted in the **DATES** section of this document, the effective date for the adopted test procedure amendments for CRACs is 30 days after publication of this final rule in the **Federal Register**. Regarding the compliance date, EPCA prescribes that, if DOE amends a test procedure, all representations of energy efficiency and energy use, including those made in the context of certification and on marketing materials and product labels, must be made in accordance with an amended test procedure, beginning 360 days after publication of the final rule in the **Federal Register**. (42 U.S.C. 6314(d)(1)) However, CRACs are not required to be tested according to the test procedure in appendix E1 (that relies on the NSenCOP metric) until the compliance date of amended energy conservation standards denominated in terms of the NSenCOP metric, should DOE adopt such standards.

I. Test Procedure Costs

EPCA requires that the test procedures for commercial package air conditioning and heating equipment 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 an 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 final rule, DOE is amending the existing test procedure for CRACs, by adopting the industry test standard AHRI 1360–2022, including the energy efficiency metric, NSenCOP. DOE is also amending its representation and enforcement provisions for CRACs.

In the February 2022 NOPR, DOE walked through the anticipated compliance costs associated with the proposed test procedure and tentatively determined that the test procedure proposals presented in the NOPR would not increase testing burden for most CRAC manufacturers (*i.e.,* CRAC manufacturers who are AHRI members), compared to current industry practice as indicated by AHRI 1360–202X Draft, and that those proposed amendments would not have a significant impact on the remaining CRAC manufacturers (*i.e.,* CRAC manufacturers who are not AHRI members). 87 FR 6948, 6968–6970 (Feb. 7, 2022).

AHRI commented that manufacturers, particularly of up-flow CRACs, will experience significant impact if DOE adopts AHRI 1360–202X Draft, rather than AHRI 1360–2017, noting that AHRI 1360–202X Draft includes a revised right-angle static pressure deduction based on a study conducted on forward curve fans, which changes the static pressure deduction from a fixed 0.3 inches water gauge to one based on velocity. (AHRI, No. 9 at pp. 8–9)

In response, DOE first notes that as previously mentioned, AHRI 1360–202X Draft has been finalized as AHRI 1360–2022. The amended test procedure adopted in this final rule does not impose any additional test ducting provisions beyond those included in the amended industry consensus test procedure, AHRI 1360–2022. Additionally, DOE notes that the test provision for up-flow CRACs highlighted by AHRI is an alternate ducting methodology to be used when there is limited chamber height to meet the ducting requirements of ANSI/ASHRAE Standard 37, which are referenced in both ANSI/ASHRAE 127–2007 and AHRI 1360–2022. For most up-flow CRAC units (*i.e.,* all CRACs except for tall units with large discharge duct dimensions), manufacturers can still choose to test their units in taller test chambers using the ducting requirements of ANSI/ASHRAE Standard 37, which comply with both the current CRAC test procedure and the amended test procedure adopted in this final rule. Further, DOE notes that the AEDM provision in 10 CFR 429.70 allow the use of AEDMs to develop ratings for CRACs, and, thus, manufacturers would not be required to test their very tall up-flow CRACs.

DOE has determined that the amendments in this final rule will improve the representativeness, accuracy, and reproducibility of the test results and will not be unduly burdensome for manufacturers to conduct or result in increased testing cost as compared to the current test procedure. Because the current DOE test procedure for CRACs is being relocated to appendix E without change, the test procedure in appendix E for measuring SCOP will result in no change in testing practices. Should DOE adopt the proposed standards in the ongoing energy conservation standards rulemaking (*see* 87 FR 12802 (March 7, 2022)) denominated in terms of the new metric (*i.e.,* NSenCOP), the amended test procedure in appendix E1 for measuring NSenCOP (as per AHRI 1360–2022) would be required for use upon the compliance date of such standards.

DOE has concluded that the test procedure at appendix E will not increase third-party lab testing costs per unit relative to the current DOE test procedure, which DOE estimates to be $10,200 (for CRACs that are physically tested [27]). However, DOE has concluded that the potential adoption of standards denominated in terms of NSenCOP (and the corresponding requirement to use the amended test procedure in appendix E1) would alter the measured energy efficiency for CRACs. Consequently, manufacturers would likely not be able to rely on data generated under the current test procedure and would, therefore, be required to re-rate CRAC models. In accordance with 10 CFR 429.70, CRAC manufacturers may elect to use AEDMs to rate models, which significantly reduces costs to industry. DOE estimates the per-manufacturer cost to develop and validate an AEDM for CRACs to be $46,000. DOE estimates a cost of approximately $50 per basic model [28] for determining energy efficiency using the validated AEDM.

Given that most CRAC manufacturers are AHRI members, and that DOE is adopting the procedure in the prevailing industry test procedure that was established for use in AHRI's certification program, which has already been updated to include NSenCOP, DOE expects that most manufacturers will already be testing using the published version of the AHRI 1360–2022 in the timeframe of any potential future energy conservation standard. Based on this, DOE has determined that the test procedure amendments are not expected to increase the testing burden on CRAC manufacturers that are AHRI members. For the minority of CRAC manufacturers that are not members of AHRI, the test procedure amendments may have costs associated with model re-rating, to the extent that the manufacturers would not already be testing to the updated industry test procedure.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

Executive Order (''E.O.'') 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993), as supplemented and reaffirmed by E.O. 13563, ''Improving Regulation and Regulatory Review,'' 76 FR 3821 (Jan. 21, 2011), requires agencies, to the extent permitted by law, to: (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, the Office of Information and Regulatory Affairs (''OIRA'') in the Office of Management and Budget (''OMB'') has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, this final regulatory action is consistent with these principles.

Section 6(a) of E.O. 12866 also requires agencies to submit ''significant regulatory actions'' to OIRA for review. OIRA has determined that this final regulatory action does not constitute a ''significant regulatory action'' under section 3(f) of E.O. 12866. Accordingly, this action was not submitted to OIRA for review under E.O. 12866.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of a final regulatory flexibility analysis (FRFA) for any final rule where the agency was first required by law to publish a proposed rule 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 final rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003.

On February 7, 2022, DOE published in the **Federal Register** a notice of proposed rulemaking (''February 2022 NOPR'') proposing to update the references in the Federal test procedures to the most recent version of the relevant industry test procedures as they relate to computer room air conditioners (''CRACs'').

As part of the February 2022 NOPR, DOE conducted its initial regulatory flexibility analysis (''IRFA''). 87 FR 6948, 6969–6970 (Feb. 7, 2022). DOE

[27] Manufacturers are not required to perform laboratory testing on all basic models. In accordance with 10 CFR 429.70, CRAC 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.

[28] DOE estimated initial costs to validate an AEDM assuming 80 hours of general time to develop an AEDM based on existing simulation tools and 16 hours to validate two basic models within that AEDM at the cost of an engineering technician wage of $50 per hour plus the cost of third-party physical testing of two units per validation class (as required in 10 CFR 429.70(c)(2)(iv)). DOE estimated the additional per basic model cost to determine efficiency using an AEDM, assuming 1 hour per basic model at the cost of an engineering technician wage of $50 per hour.

used the Small Business Administration (''SBA'') small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the North American Industry Classification System (NAICS).[29] The SBA considers a business entity to be a small business, if, together with its affiliates, it employs less than a threshold number of workers specified in 13 CFR part 121.

CRAC manufacturers are classified under NAICS code 333415, ''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 utilized the California Energy Commission's Modernized Appliance Efficiency Database System (''MAEDbS'') [30] and DOE's Compliance Certification Database (''CCD'') [31] in identifying potential small businesses that manufacture CRACs covered by this rulemaking. DOE used subscription-based business information tools (*e.g.,* reports from Dun & Bradstreet [32]) to determine headcount and revenue of those small businesses. DOE identified nine companies that are original equipment manufacturers (''OEMs'') of CRACs covered by this rulemaking. DOE screened out companies that do not meet the definition of a ''small business'' or are foreign-owned and operated. DOE identified three small, domestic OEMs for consideration and noted that one small, domestic OEM was not an AHRI member, while the other two small, domestic OEMs were AHRI members. 87 FR 6948, 6969 (Feb. 7, 2022). DOE noted that small businesses would be expected to have different potential regulatory costs depending on whether they are a member of AHRI or not. *Id.* at 87 FR 6970. DOE requested comment on the number of small businesses DOE identified and on the potential costs for the small business that is not an AHRI member and manufactures CRACs. *Id.*

On that topic, AHRI commented that it represented the following single package vertical units (''SPVU'') companies that likely met the criteria of small businesses that could be disproportionally impacted by amended energy conservation standards: Bard Manufacturing Company, Marvair, Systemair, Temspec, and United CoolAir. (AHRI, No. 9 at p. 9)

In response to AHRI's comment, DOE evaluated the four manufacturers mentioned by AHRI and their product offerings. While these manufacturers primarily manufacture SPVUs, which are not the subject of this rulemaking, DOE's review found that two of these manufacturers also offer products that meet the definition of wall-mounted CRAC adopted in this final rule. One of the two manufacturers qualifies as a small business under the applicable NAICS code (NAICS code 333415). However, DOE notes that there are currently no energy conservation standards for wall-mounted CRACs, and this is a test procedure rulemaking with no proposed amendments to energy conservation standards. Furthermore, DOE notes that no standards were proposed for wall-mounted CRACs in the March 2022 ECS NOPR. Consequently, these two manufacturers would not incur costs as a result of this final rule unless they choose to make voluntary representations regarding the NSenCOP of the subject equipment. Further, DOE is not adopting any test requirements for wall-mounted CRACs that are not included in the industry consensus test procedure AHRI 1360–2022. Additionally, AHRI's comment suggests that these manufacturers are AHRI members. Therefore, as discussed later in this section, it is DOE's conclusion that the test procedure amendments would not add any additional testing burden (beyond the updated industry consensus test procedure) to manufacturers that are members of AHRI.

In this final rule, DOE is relocating the current DOE test procedure to a new appendix E of subpart F of part 431 (''appendix E'') without change. DOE is also establishing an amended test procedure at appendix E1 to subpart F of part 431 (''appendix E1''), which incorporates by reference the updated industry test standard AHRI 1360–2022 for CRACs. Additionally, this final rule amends certain representation and enforcement provisions for CRACs in 10 CFR part 429.

Appendix E does not contain any changes from the current Federal test procedure, and, therefore, will not impose no cost on industry and will not require retesting solely as a result of DOE's adoption of this amendment to the test procedure.

The amended test procedure in appendix E1 includes amendments for measuring CRAC energy efficiency using the NSenCOP metric so as to be consistent with the updated industry test procedure. Should DOE adopt amended energy conservation standards in the future that are denominated in terms of NSenCOP (as proposed in the March 2022 ECS NOPR), DOE expects there would not be an increase in third-party lab testing costs per unit relative to the current Federal test procedure. DOE estimates such testing costs to be $10,200 per unit for physical testing. DOE has concluded that the amended test procedure may require re-rating of CRAC models; however, this would not be mandatory until such time as DOE amends the energy conservation standards for CRACs based on NSenCOP, should DOE adopt such amendments.

If CRAC manufacturers conduct physical testing to certify a basic model, two units are required to be tested per basic model. However, manufacturers are not required to perform laboratory testing on all basic models, as CRAC manufacturers may elect to use AEDMs.[33] 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.

Small businesses would be expected to have different potential regulatory costs depending on whether they are a member of AHRI. DOE understands that all AHRI members and all manufacturers currently certifying to the AHRI Directory will be testing their CRAC models in accordance with AHRI 1360–2022, the industry test procedure DOE is incorporating by reference, and using AHRI's certification program, which has already been updated to include the NSenCOP metric.

The test procedure amendments would not add any additional testing burden to manufacturers that are members of AHRI, as those members currently are or soon will be using the AHRI 1360–2022 test procedure. If DOE were to adopt energy conservation standards denominated in terms of the NSenCOP metric, the amended test procedure may, however, result in re-rating costs for manufacturers which are

[29] 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 August 30, 2021).

[30] MAEDbS can be accessed at *www.cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx* (last accessed August 30, 2021).

[31] Certified equipment in the CCD are listed by product class and can be accessed at *www.regulations.doe.gov/certification-data/#q=Product_Group_s%3A** (last accessed August 30, 2021).

[32] Market research available at: *app.dnbhoovers.com* (last accessed August 30, 2021).

[33] In accordance with 10 CFR 429.70.

not AHRI members (currently one identified OEM).

DOE estimated the range of additional potential testing costs for the single small CRAC manufacturer that is not an AHRI member. This small business would only incur additional testing costs if they would not already be using AHRI 1360–2022 to test their CRAC models. DOE estimates that this small business manufactures 113 basic models.

When developing cost estimates for this single, non-AHRI-member small business, DOE considered the cost to develop an AEDM, the costs to validate the AEDM through physical testing, and the cost per model to determine ratings using the AEDM. DOE anticipates that this small OEM would avail itself of the cost-saving option which the AEDM provides. DOE estimated the cost to develop and validate an AEDM for CRACs to be approximately $46,000, which includes physical testing of two models per validation class. Additionally, DOE estimated a cost of approximately $50 per basic model for determining energy efficiency using the validated AEDM. The estimated cost to rate the 113 basic models with the AEDM would be $5,650. Therefore, should DOE adopt amended energy conservation standards denominated in terms of NSenCOP as the efficiency metric (as proposed in the March 2022 ECS NOPR), this small business could incur total testing and rating costs of $51,650. DOE understands the annual revenue of this small business to be approximately $17 million. Therefore, testing and AEDM costs could cause this small business manufacturer to incur costs of up to 0.30 percent of its annual revenue.

Therefore, for the reasons stated in the preceding paragraphs, DOE concludes and certifies that the cost effects accruing from this test procedure final rule would not have a ''significant economic impact on a substantial number of small entities,'' and that the preparation of a FRFA is not warranted. DOE has submitted a certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of CRACs 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 CRACs. (*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.

DOE is not amending the certification or reporting requirements for CRACs in this final rule. Instead, DOE may consider proposals to amend the certification requirements and reporting for CRACs under a separate rulemaking regarding appliance and equipment certification. DOE will address changes to OMB Control Number 1910–1400 at that time, as necessary.

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 has analyzed this regulation in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.;* ''NEPA'') and DOE's NEPA implementing regulations (10 CFR part 1021). In this final rule, DOE establishes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for CRACs. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under NEPA and DOE's implementing regulations, because it is a rulemaking that interprets or amends an existing rule or regulation that does not change the environmental effect of the rule or regulation being amended. Specifically, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR part 1021, subpart D, appendix A, sections A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

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 13735. DOE examined this final rule and has determined that it will 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 final 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 (Feb. 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, this final 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 regulatory action resulting 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 final 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 final rule will 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 regulation will 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 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 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 final 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 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 significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use if the regulation is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

This regulatory action to amend the test procedure for measuring the energy efficiency of CRACs 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 amendments to the Federal test procedure for CRACs contained in this final rule adopt testing methods contained in certain sections of the following commercial standards: AHRI 1360–2022, ANSI/ASHRAE 37–2009, and ANSI/ASHRAE 127–2020. 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 they were developed in a manner that fully provides for public participation, comment, and review.) DOE has consulted with both the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in these standards and has received no comments objecting to their use.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule before its effective date. The report will state that it has been determined that the final rule is not a

''major rule'' as defined by 5 U.S.C. 804(2).

N. Description of Materials Incorporated by Reference

In this final rule, DOE incorporates by reference the following test standards:

AHRI 1360–2022 is an industry-accepted test standard for measuring the performance of CRACs. AHRI 1360–2022 is available from AHRI at *www.ahrinet.org/search-standards.aspx.*

ANSI/ASHRAE 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 37–2009 is available from ASHRAE and on ANSI's website at *webstore.ansi.org/RecordDetail.aspx?sku=ANSI%2FASHRAE+Standard+37-2009.*

ANSI/ASHRAE 127–2007 is an industry-accepted test procedure for measuring the performance of CRACs. ANSI/ASHRAE 127–2007 is available from ASHRAE and on ANSI's website at *https://webstore.ansi.org/standards/ashrae/ansiashrae1272007.*

ANSI/ASHRAE 127–2020 is an industry-accepted test procedure for measuring the performance of CRACs, which updates ANSI/ASHRAE 127–2007 to include new CRAC cooling configurations. ANSI/ASHRAE 127–2020 is available from ASHRAE and on ANSI's website at *webstore.ansi.org/standards/ashrae/ansiashrae1272020.*

The following standards were previously approved for incorporation by reference in the sections where they appear and no change is made: AHRI 210/240–2008, AHRI 340/360–2007, and ISO Standard 13256–1.

V. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

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

10 CFR Part 431

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

Signing Authority

This document of the Department of Energy was signed on March 28, 2023, by Francisco Alejandro Moreno, 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 March 28, 2023.

Treena V. Garrett,

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

For the reasons stated in the preamble, DOE is amending 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:
■ a. Removing the text ''http://'' wherever it appears;
■ b. Redesignating paragraph (c)(5) as paragraph (c)(6); and
■ c. Adding new paragraph (c)(5).

The addition reads as follows:

§ 429.4 Materials incorporated by reference.

* * * * *

(c) * * *

(5) AHRI Standard 1360–2022 (I–P) (''AHRI 1360–2022''), *2022 Standard for Performance Rating of Computer and Data Processing Room Air Conditioners,* copyright 2022; IBR approved for § 429.43.

* * * * *

■ 3. Amend § 429.43 by adding paragraph (a)(3)(iv) to 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).

(a) * * *

(3) * * *

(iv) *Computer room air conditioners.* When certifying to standards in terms of net sensible coefficient of performance (NSenCOP), the following provisions apply.

(A) For individual model selection:

(*1*) Representations for a basic model must be based on the least-efficient individual model(s) distributed in commerce among all otherwise comparable model groups comprising the basic model, except as provided in paragraph (a)(3)(iv)(A)(*2*) of this section for individual models that include components listed in table 5 to paragraph (a)(3)(iv)(A) of this section. For the purpose of this paragraph (a)(3)(iv)(A)(*1*), *otherwise comparable model group* means a group of individual models distributed in commerce within the basic model that do not differ in components that affect energy consumption as measured according to the applicable test procedure specified at 10 CFR 431.96 other than those listed in table 5 to paragraph (a)(3)(iv)(A) of this section. An otherwise comparable model group may include individual models distributed in commerce with any combination of the components listed in table 5 (or none of the components listed in table 5). An otherwise comparable model group may consist of only one individual model.

(*2*) For a basic model that includes individual models distributed in commerce, with components listed in table 5 to paragraph (a)(3)(iv)(A) of this section, the requirements for determining representations apply only to the individual model(s) of a specific otherwise comparable model group distributed in commerce with the least number (which could be zero) of components listed in table 5 to paragraph (a)(3)(iv)(A) included in individual models of the group. Testing under this paragraph (a)(3)(iv)(A)(*2*) shall be consistent with any component-specific test provisions specified in section 4 of appendix E1 to subpart F of 10 CFR part 431.

TABLE 5 TO PARAGRAPH (a)(3)(iv)(A)—SPECIFIC COMPONENTS FOR COMPUTER ROOM AIR CONDITIONERS

Component	Description
Air Economizers	An automatic system that enables a cooling system to supply and use outdoor air to reduce or eliminate the need for mechanical cooling during mild or cold weather.
Process Heat Recovery/Reclaim Coils/Thermal Storage.	A heat exchanger located inside the unit that conditions the equipment's supply air using energy transferred from an external source using a vapor, gas, or liquid.
Evaporative Pre-cooling of Air-cooled Condenser Intake Air.	Water is evaporated into the air entering the air-cooled condenser to lower the dry-bulb temperature and thereby increase efficiency of the refrigeration cycle.
Steam/Hydronic Heat Coils	Coils used to provide supplemental heat.
Refrigerant Reheat Coils	A heat exchanger located downstream of the indoor coil that heats the supply air during cooling operation using high pressure refrigerant in order to increase the ratio of moisture removal to cooling capacity provided by the equipment.
Powered Exhaust/Powered Return Air Fans	A powered exhaust fan is a fan that transfers directly to the outside a portion of the building air that is returning to the unit, rather than allowing it to recirculate to the indoor coil and back to the building. A powered return air fan is a fan that draws building air into the equipment.
Compressor Variable Frequency Drive (VFD)	A device connected electrically between the equipment's power supply connection and the compressor that can vary the frequency of power supplied to the compressor in order to allow variation of the compressor's rotational speed. If the manufacturer chooses to make representations for performance at part-load and/or low-ambient conditions, compressor VFDs must be treated consistently for all cooling capacity tests for the basic model (*i.e.,* if the compressor VFD is installed and active for the part-load and/or low-ambient tests, it must also be installed and active for the NSenCOP test).
Fire/Smoke/Isolation Dampers	A damper assembly including means to open and close the damper mounted at the supply or return duct opening of the equipment.
Non-Standard Indoor Fan Motors	The standard indoor fan motor is the motor specified in the manufacturer's installation instructions for testing and shall be distributed in commerce as part of a particular model. A non-standard motor is an indoor fan motor that is not the standard indoor fan motor and that is distributed in commerce as part of an individual model within the same basic model. For a non-standard indoor fan motor(s) to be considered a specific component for a basic model (and thus subject to the provisions of paragraph (a)(3)(iv)(A) of this section), the following provisions must be met: 1. Non-standard indoor fan motor(s) must meet the minimum allowable efficiency determined per section D.2.1 of AHRI 1360–2022 (incorporated by reference, see § 429.4) (*i.e.,* for non-standard indoor fan motors) or per section D.2.2 of AHRI 1360–2022 for non-standard indoor integrated fan and motor combinations). If the standard indoor fan motor can vary fan speed through control system adjustment of motor speed, all non-standard indoor fan motors must also allow speed control (including with the use of VFD).
Humidifiers	A device placed in the supply air stream for moisture evaporation and distribution. The device may require building steam or water, hot water, electricity, or gas to operate.
Flooded Condenser Head Pressure Controls	An assembly, including a receiver and head pressure control valve, used to allow for unit operation at lower outdoor ambient temperatures than the standard operating control system.
Chilled Water Dual Cooling Coils	A secondary chilled water coil added in the indoor air stream for use as the primary or secondary cooling circuit in conjunction with a separate chiller.
Condensate Pump	A device used to pump condensate and/or humidifier drain water from inside the unit to a customer drain outside the unit.

(B) The represented value of net sensible cooling capacity must be between 95 percent and 100 percent of the mean of the capacities measured for the units in the sample selected as described in paragraph (a)(1)(ii) of this section, or between 95 percent and 100 percent of the net sensible cooling capacity output simulated by the AEDM as described in paragraph (a)(2) of this section.

* * * * *

■ 4. Amend § 429.70 by revising the table in paragraph (c)(2)(iv) to read as follows:

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

* * * * *

(c) * * *

(2) * * *

(iv) * * *

TABLE 1 TO PARAGRAPH (c)(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.

TABLE 1 TO PARAGRAPH (c)(2)(iv)—Continued

Validation class	Minimum number of distinct models that must be tested per AEDM
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 and Glycol-Cooled	2 Basic Models.
Direct Expansion-Dedicated Outdoor Air Systems, Air-cooled or Air-source Heat Pump, Without Ventilation Energy Recovery Systems.	2 Basic Models.
Direct Expansion-Dedicated Outdoor Air Systems, Air-cooled or Air-source Heat Pump, With Ventilation Energy Recovery Systems.	2 Basic Models.
Direct Expansion-Dedicated Outdoor Air Systems, Water-cooled, Water-source Heat Pump, or Ground Source Closed-loop Heat Pump, Without Ventilation Energy Recovery Systems.	2 Basic Models.
Direct Expansion-Dedicated Outdoor Air Systems, Water-cooled, Water-source Heat Pump, or Ground Source Closed-loop Heat Pump, With Ventilation Energy Recovery Systems.	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 [1]	
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.

* * * * *

■ 5. Amend § 429.134 by adding paragraph (aa) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(aa) *Computer room air conditioners.* The following provisions apply for assessment and enforcement testing of models subject to energy conservation standards denominated in terms of NSenCOP.

(1) *Verification of net sensible cooling capacity.* The net sensible cooling capacity of each tested unit of the basic model will be measured pursuant to the test requirements of 10 CFR part 431, subpart F, appendix E1. The mean of the net sensible cooling capacity measurement(s) will be used to determine the applicable energy conservation standards for purposes of compliance.

(2) *Specific components.* If a basic model includes individual models with components listed at table 5 to § 429.43(a)(3)(iv)(A) and DOE is not able to obtain an individual model with the least number (which could be zero) of those components within an otherwise comparable model group (as defined in § 429.43(a)(3)(iv)(A)(*1*)), DOE may test any individual model within the otherwise comparable model group.

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

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

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

■ 7. Section 431.92 is amended by:

■ a. Revising the introductory text;

■ b. Adding, in alphabetical order, definitions for ''Ceiling-mounted,'' ''Ceiling-mounted ducted,'' and ''Ceiling-mounted non-ducted'';
■ c. Removing the definition for ''Computer Room Air Conditioner'' and adding the definition ''Computer room air conditioner'' in its place; and
■ d. Adding, in alphabetical order, definitions for ''Down-flow,'' ''Floor-mounted,'' ''Fluid economizer,'' ''Horizontal-flow,'' ''Net sensible coefficient of performance, or NSenCOP,'' ''Roof-mounted,'' ''Up-flow,'' ''Up-flow ducted,'' ''Up-flow non-ducted,'' and ''Wall-mounted.''

The revisions and additions read as follows:

§ 431.92 Definitions concerning commercial air conditioners and heat pumps.

The following definitions apply for purposes of this subpart, and of subparts J through M of this part. Any words or terms not defined in this section or elsewhere in this part shall be defined as provided in 42 U.S.C. 6311. For definitions that reference the application for which the equipment is marketed, DOE will consider any publicly available document published by the manufacturer (*e.g.,* product literature, catalogs, and packaging labels) to determine marketing intent. For definitions in this section that pertain to computer room air conditioners, italicized terms within a definition indicate terms that are separately defined in this section.

* * * * *

Ceiling-mounted means a configuration of a *computer room air conditioner* for which the unit housing the evaporator coil is configured for indoor installation on or through a ceiling.

Ceiling-mounted ducted means a configuration of a *ceiling-mounted computer room air conditioner* that is configured for use with discharge ducting (even if the unit is also configurable for use without discharge ducting).

Ceiling-mounted non-ducted means a configuration of a *ceiling-mounted computer room air conditioner* that is configured only for use without discharge ducting.

* * * * *

Computer room air conditioner means commercial package air-conditioning and heating equipment (packaged or split) that is marketed for use in computer rooms, data processing rooms, or other information technology cooling applications and not a covered consumer product under 42 U.S.C. 6291(1)–(2) and 42 U.S.C. 6292. A computer room air conditioner may be provided with, or have as available options, an integrated humidifier, temperature and/or humidity control of the supplied air, and reheating function. Computer room air conditioners include, but are not limited to, the following configurations as defined in this section: *down-flow, horizontal-flow, up-flow ducted, up-flow non-ducted, ceiling-mounted ducted, ceiling mounted non-ducted, roof-mounted,* and *wall-mounted.*

* * * * *

Down-flow means a configuration of *floor-mounted computer room air conditioner* in which return air enters above the top of the evaporator coil and discharge air leaves below the bottom of the evaporator coil.

* * * * *

Floor-mounted means a configuration of a *computer room air conditioner* for which the unit housing the evaporator coil is configured for indoor installation on a solid floor, raised floor, or floor-stand. Floor-mounted *computer room air conditioners* are one of the following three configurations: *down-flow, horizontal-flow,* and *up-flow.*

Fluid economizer means an option available with a *computer room air conditioner* in which a fluid (other than air), cooled externally from the unit, provides cooling of the indoor air to reduce or eliminate unit compressor operation when outdoor temperature is low. The fluid may include, but is not limited to, chilled water, water/glycol solution, or refrigerant. An external fluid cooler such as, but not limited to a dry cooler, cooling tower, or condenser is utilized for heat rejection. This component is sometimes referred to as a free cooling coil, econ-o-coil, or economizer.

* * * * *

Horizontal-flow means a configuration of a *floor-mounted computer room air conditioner* that is neither a *down-flow* nor an *up-flow* unit.

* * * * *

Net sensible coefficient of performance, or *NSenCOP,* means a ratio of the net sensible cooling capacity in kilowatts to the total power input in kilowatts for *computer room air conditioners,* as measured in appendix E1 of this subpart.

* * * * *

Roof-mounted means a configuration of a *computer room air conditioner* that is not *wall-mounted,* and for which the unit housing the evaporator coil is configured for outdoor installation.

* * * * *

Up-flow means a configuration of a *floor-mounted computer room air conditioner* in which return air enters below the bottom of the evaporator coil and discharge air leaves above the top of the evaporator coil.

Up-flow ducted means a configuration of an *up-flow computer room air conditioner* that is configured for use with discharge ducting (even if the unit is also configurable for use without discharge ducting).

Up-flow non-ducted means a configuration of an *up-flow computer room air conditioner* that is configured only for use without discharge ducting.

* * * * *

Wall-mounted means a configuration of a *computer room air conditioner* for which the unit housing the evaporator coil is configured for installation on or through a wall.

* * * * *

■ 8. Amend § 431.95 by:
■ a. Adding paragraph (b)(10);
■ b. In paragraph (c)(2), removing the text ''D1, F1'' and adding, in its place, ''D1, E1, F1'';
■ c. In paragraph (c)(7), removing the text ''§ 431.96'' and adding, in its place, ''§ 431.96 and appendix E to this subpart'';
■ d. Redesignating paragraph (c)(8) as paragraph (c)(9); and
■ e. Adding new paragraph (c)(8).

The additions and revisions read as follows:

§ 431.95 Materials incorporated by reference.

* * * * *

(b) * * *

(10) AHRI Standard 1360–2022 (I–P) (''AHRI 1360–2022''), 2022 *Standard for Performance Rating of Computer and Data Processing Room Air Conditioners,* copyright 2022; IBR approved for appendix E1 to this subpart.

(c) * * *

(8) ANSI/ASHRAE Standard 127–2020 (''ANSI/ASHRAE 127–2020''), *Method of Rating Air-Conditioning Units Serving Data Center (DC) and Other Information Technology Equipment (ITE) Spaces,* ANSI-approved on November 30, 2020; IBR approved for appendix E1 to this subpart.

* * * * *

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

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

* * * * *

(b) * * *

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

Equipment type	Category	Cooling capacity or moisture removal capacity [2]	Energy efficiency descriptor	Use tests, conditions, and procedures [1] in	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 F to this subpart [3].	None.
			SEER2 and HSPF2	Appendix F1 to this subpart [3].	None.
	Air-Cooled AC and HP	≥65,000 Btu/h and <135,000 Btu/h.	EER, IEER, and COP	Appendix A of this subpart.	None.
	Water-Cooled and Evaporatively-Cooled AC.	<65,000 Btu/h	EER	AHRI 210/240–2008 (omit section 6.5).	Paragraphs (c) and (e).
		≥65,000 Btu/h and <135,000 Btu/h.	EER	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	Paragraph (e).
Large Commercial Package Air-Conditioning and Heating Equipment.	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	<760,000 Btu/h	SCOP	Appendix E to this subpart [3].	None.
		<760,000 Btu/h	NSenCOP	Appendix E1 to this subpart [3].	None.
Variable Refrigerant Flow Multi-split Systems.	AC	<65,000 Btu/h (3-phase)	SEER	Appendix F to this subpart [3].	None.
			SEER2	Appendix F1 to this subpart [3].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	HP	<65,000 Btu/h (3-phase)	SEER and HSPF	Appendix F to this subpart [3].	None.
			SEER2 and HSPF2	Appendix F1 to this subpart [3].	None.
Variable Refrigerant Flow Multi-split Systems, Air-cooled.	AC and HP	≥65,000 Btu/h and <760,000 Btu/h.	EER and COP	Appendix D of this subpart [3].	None.
		≥65,000 Btu/h and <760,000 Btu/h.	IEER and COP	Appendix D1 of this subpart [3].	None.
Variable Refrigerant Flow Multi-split Systems, Water-source.	HP	<760,000 Btu/h	EER and COP	Appendix D of this subpart [3].	None.
		<760,000 Btu/h	IEER and COP	Appendix D1 of this subpart [3].	None.
Single Package Vertical Air Conditioners and Single Package Vertical Heat Pumps.	AC and HP	<760,000 Btu/h	EER and COP	Appendix G to this subpart [3].	None.
			EER, IEER, and COP	Appendix G1 to this subpart [3].	None.
Direct Expansion-Dedicated Outdoor Air Systems.	All	<324 lbs. of moisture removal/hr.	ISMRE2 and ISCOP2	Appendix B of this subpart.	None.

[1] Incorporated by reference; see § 431.95.
[2] Moisture removal capacity applies only to direct expansion-dedicated outdoor air systems.
[3] For equipment with multiple appendices listed in this table, consult the notes at the beginning of those appendices to determine the applicable appendix to use for testing.

* * * * *

■ 10. Add appendix E to subpart F of part 431 to read as follows:

Appendix E to Subpart F of Part 431—Uniform Test Method for Measuring the Energy Consumption of Computer Room Air Conditioners

Note: Manufacturers must use the results of testing under this appendix to determine compliance with the relevant energy conservation standards for computer room air conditioners from § 431.97 as that standard appeared in the January 1, 2022 edition of 10 CFR parts 200 through 499. Specifically, representations, including compliance certifications, 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 through 499 edition revised as of January 1, 2022.

For any amended standards for computer room air conditioners that rely on net sensible coefficient of performance (NSenCOP) published after January 1, 2022, manufacturers must use the results of testing under appendix E1 to this subpart to determine compliance. Manufacturers may use appendix E1 to certify compliance with any amended standards prior to the applicable compliance date for those standards.

Specifically, representations, including compliance certifications, related to energy consumption must be based upon results generated under the appropriate appendix that applies (*i.e.,* this appendix or appendix E1 to this subpart) when determining compliance with the relevant standard.

1. *Incorporation by Reference.*

DOE incorporated by reference in § 431.95 the entire standard for ASHRAE 127–2007. However, certain enumerated provisions of ASHRAE 127–2007, as listed in section 1.1, are inapplicable. To the extent that there is a conflict between the terms or provisions of a referenced industry standard and the CFR, the CFR provisions control.

1.1 ASHRAE 127–2007:

(a) Section 5.11 is inapplicable as specified in section 2 of this appendix.

(b) [Reserved]

1.2 [Reserved]

2. *General.* Determine the sensible coefficient of performance (SCOP) in accordance with ASHRAE 127–2007.

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 4.1 and 4.2 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 must 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 must be used.

■ 11. Add appendix E1 to subpart F of part 431 to read as follows:

Appendix E1 to Subpart F of Part 431—Uniform Test Method for Measuring the Energy Consumption of Computer Room Air Conditioners

Note: Prior to the compliance date for any amended energy conservation standards based on NSenCOP for computer room air conditioners, representations with respect to energy use or efficiency of this equipment, including compliance certifications, must be based on testing pursuant to appendix E to this subpart. Subsequently, manufacturers must use the results of testing under this appendix to determine compliance with any amended energy conservation standards for computer room air conditioners provided in § 431.97 that are published after January 1, 2022, and that rely on net sensible coefficient of performance (NSenCOP). Specifically, representations, including compliance certifications, related to energy consumption must be based upon results generated under the appropriate appendix that applies (*i.e.,* appendix E to this subpart or this appendix) when determining compliance with the relevant standard. Manufacturers may 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 standards for AHRI 1360–2022, ANSI/ASHRAE 37–2009, and ANSI/ASHRAE 127–2020. However, as listed in sections 1.1, 1.2, and 1.3 of this appendix, only certain enumerated provisions of AHRI 1360–2022 and ANSI/ASHRAE 127–2020 are applicable, and only certain enumerated provisions of ANSI/ASHRAE 37–2009 are not applicable. To the extent that there is a conflict between the terms or provisions of a referenced industry standard and the CFR, the CFR provisions control.

1.1 AHRI 1360–2022:

(a) The following sections of Section 3. Definitions—3.1 (Expressions of Provision), 3.2.2 (Air Sampling Device(s)), 3.2.7 (Computer and Data Processing Room Air Conditioner), 3.2.22 (Indoor Unit), 3.2.25 (Manufacturer's Installation Instruction), 3.2.27 (Net Sensible Cooling Capacity), 3.2.28 (Net Total Cooling Capacity), 3.2.37 (Standard Air) and 3.2.38 (Standard Airflow) are applicable.

(b) Section 5. Test Requirements, is applicable.

(c) The following sections of Section 6. Rating Requirements—6.1–6.3, 6.5 and 6.7 are applicable.

(d) Appendix C. Standard Configurations—Normative, is applicable.

(e) Section D2 of Appendix D. Non-Standard Indoor Fan Motors for CRAC units, is applicable.

(f) Appendix E. Method of Testing Computer and Data Processing Room Air Conditioners—Normative, is applicable.

(g) Appendix F. Indoor and Outdoor Air Condition Measurement—Normative is applicable.

1.2 ANSI/ASHRAE 127–2020:

(a) Appendix A—Figure A–1, Test duct for measuring air flow and static pressure on downflow units, is applicable.

(b) [Reserved].

1.3 ASHRAE 37–2009:

(a) Section 1 Purpose is inapplicable.

(b) Section 2 Scope is inapplicable.

(c) Section 4 Classification is inapplicable.

2. General. Determine the net sensible coefficient of performance (NSenCOP), in accordance with AHRI 1360–2022, ANSI/ASHRAE 127–2020, and ANSI/ASHRAE 37–2009. In cases where there is a conflict between these sources, the language of this appendix takes highest precedence, followed by AHRI 1360–2022, followed by ANSI/ASHRAE 127–2020, followed by ANSI/ASHRAE 37–2009. Any subsequent amendment to a referenced document by a standard-setting organization will not affect the test procedure in this appendix, unless and until this test procedure is amended by DOE. Material is incorporated as it exists on the date of the approval, and notification of any change in the incorporation will be published in the **Federal Register**.

3. *Test Conditions*

3.1. *Test Conditions for Certification.* When testing to certify to the energy conservation standards in § 431.97, test using the ''Indoor Return Air Temperature Standard Rating Conditions'' and ''Heat Rejection/Cooling Fluid Standard Rating Conditions'' conditions, as specified in Tables 3 and 4 of AHRI 1360–2022, respectively.

4. *Set-Up and Test Provisions for Specific Components.* When testing a unit that includes any of the features listed in Table 4.1 of this appendix, test in accordance with the set-up and test provisions specified in Table 4.1 of this appendix.

TABLE 4.1—TEST PROVISIONS FOR SPECIFIC COMPONENTS

Component	Description	Test provisions
Air Economizers	An automatic system that enables a cooling system to supply outdoor air to reduce or eliminate the need for mechanical cooling during mild or cold weather.	For any air economizer that is factory-installed, place the economizer in the 100% return position and close and seal the outside air dampers for testing. For any modular air economizer shipped with the unit but not factory-installed, do not install the economizer for testing.
Process Heat Recovery/Reclaim Coils/Thermal Storage	A heat exchanger located inside the unit that conditions the equipment's supply air using energy transferred from an external source using a vapor, gas, or liquid.	Disconnect the heat exchanger from its heat source for testing.

TABLE 4.1—TEST PROVISIONS FOR SPECIFIC COMPONENTS—Continued

Component	Description	Test provisions
Evaporative Pre-cooling of Condenser Intake Air	Water is evaporated into the air entering the air-cooled condenser to lower the dry-bulb temperature and thereby increase efficiency of the refrigeration cycle.	Disconnect the unit from the water supply for testing (*i.e.,* operate without active evaporative cooling).
Steam/Hydronic Heat Coils	Coils used to provide supplemental heat	Test with steam/hydronic heat coils in place but providing no heat.
Refrigerant Reheat Coils	A heat exchanger located downstream of the indoor coil that heats the supply air during cooling operation using high pressure refrigerant in order to increase the ratio of moisture removal to cooling capacity provided by the equipment.	De-activate refrigerant re-heat coils so as to provide the minimum (none if possible) reheat achievable by the system controls.
Fire/Smoke/Isolation Dampers	A damper assembly including means to open and close the damper mounted at the supply or return duct opening of the equipment.	For any fire/smoke/isolation dampers that are factory-installed, close and seal the dampers for testing. For any modular fire/smoke/isolation dampers shipped with the unit but not factory-installed, do not install the dampers for testing.
Harmonic Distortion Mitigation Devices	A high voltage device that reduces harmonic distortion measured at the line connection of the equipment that is created by electronic equipment in the unit.	Remove harmonic distortion mitigation devices for testing.
Humidifiers	A device placed in the supply air stream for moisture evaporation and distribution. The device may require building steam or water, hot water, electricity, or gas to operate.	Test with humidifiers in place but providing no humidification.
Electric Reheat Elements	Electric reheat elements and controls that are located downstream of the cooling coil that may heat the air using electrical power during the dehumidification process.	Test with electric reheat elements in place but providing no heat.
Non-standard Power Transformer	A device applied to a high voltage load that transforms input electrical voltage to that voltage necessary to operate the load.	Disable the non-standard power transformer during testing.
Chilled Water Dual Cooling Coils	A secondary chilled water coil added in the indoor air stream for use as the primary or secondary cooling circuit in conjunction with a separate chiller.	Test with chilled water dual cooling coils in place but providing no cooling.
High-Effectiveness Indoor Air Filtration	Indoor air filters with greater air filtration effectiveness than Minimum Efficiency Reporting Value (MERV) 8 for ducted units and MERV 1 for non-ducted units.	Test with the filter offered by the manufacturer with the least air filtration effectiveness that meets or exceeds MERV 8 for ducted units and MERV 1 for non-ducted units.

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