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[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 431

[Docket No. EERE-2016-BT-TP-0030]

RIN 1904-AD72

Energy Conservation Program: Test Procedure for Walk-in Coolers and Walk-in Freezers

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

ACTION: Notice of proposed rulemaking and announcement of public meeting.

SUMMARY: This document proposes amending the test procedure for certain walk-in cooler and freezer components by improving the procedure's clarity, updating related certification and enforcement provisions to address the performance-based energy conservation standards for walk-in cooler and freezer equipment, and establishing labeling requirements to aid manufacturers in determining which components would be considered for compliance purposes as intended for walk-in cooler and freezer applications. The proposed amendments consist of certain walk-in cooler and freezer refrigeration system-specific provisions, including product-specific definitions, removal of the test method for systems with hot gas defrost, and a method to accommodate refrigeration equipment that use adaptive defrost and on-cycle variable-speed evaporator fan control.

DATES: Comments: DOE will accept comments, data, and information regarding this notice of proposed rulemaking (NOPR) before and after the public meeting, but no later than **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. See section V, "Public Participation," for details.

DOE will hold a public meeting on Monday, September 12, 2016, from 9:30 a.m. to 12:30 p.m., in Washington, DC. The meeting will also be broadcast as a webinar. See section V, "Public Participation," for webinar registration information, participant instructions, and information about the capabilities available to webinar participants.

ADDRESSES: The public meeting will be held at the U.S. Department of Energy, Forrestal Building, Room 4A-104, 1000 Independence Avenue, SW., Washington, DC 20585.

Any comments submitted must identify the Test Procedure NOPR for Walk-in Coolers and Walk-in Freezers, and provide docket number EERE-2016-BT-TP-0030 and/or regulatory information number (RIN) number 1904-AD72. Comments may be submitted using any of the following methods:

1) Federal eRulemaking Portal: www.regulations.gov. Follow the instructions for submitting comments.
2) E-mail: WICF2016TP0030@ee.doe.gov Include the docket number and/or RIN in the subject line of the message.

3) Mail: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.

4) Hand Delivery/Courier: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., 6th Floor, Washington, DC, 20024. Telephone: (202) 586-6636. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

For detailed instructions on submitting comments and additional information on the rulemaking process, see section V of this document (Public Participation).

DOCKET: 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. All documents in the docket are listed in the www.regulations.gov index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at http://www.regulations.gov/#!docketDetail;D=EERE-2016-BT-TP-0030. The docket web page will contain simple instructions on how to access all documents, including

public comments, in the docket. See section V for information on how to submit comments through www.regulations.gov.

FOR FURTHER INFORMATION CONTACT:

Ms. Ashley Armstrong, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE-2J, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-6590. E-mail: Ashey.Armstrong@ee.doe.gov.

Mr. Michael Kido, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-8145. E-mail: Michael.Kido@hq.doe.gov.

For further information on how to submit a comment, review other public comments and the docket, or participate in the public meeting, contact the Appliance and Equipment Standards Program staff at (202) 586-6636 or by e-mail: WICF2016TP0030@ee.doe.gov.

SUPPLEMENTARY INFORMATION:

DOE proposes to incorporate by reference the following industry standards into 10 CFR part 431:

1) AHRI Standard 420-2008 ("AHRI 420-2008"), "Performance Rating of Forced-Circulation Free-Delivery Unit Coolers for Refrigeration," approved 2008.

2) AHRI Standard 1250-2009 ("AHRI 1250-2009"), “Standard for Performance Rating of Walk-in Coolers and Freezers,” approved 2009.

3) ASHRAE Standard 23.1-2010 ("ASHRAE 23.1-2010"), "Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant," approved 2010.

4) ASTM C518-04 (“ASTM C518”), Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus, approved May 1, 2004.

Copies of AHRI Standard 420-2008 and AHRI Standard 1250-2009 may be purchased from AHRI at 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201, or by going to http://www.ahrinet.org.

Copies of ASHRAE 23.1-2010 may be purchased from ASHRAE at 1971 Tullie Circle NE., Atlanta, GA 30329, or by going to http://www.ashrae.org.

Copies of ASTM C518 may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, (610) 832-9500, or http://www.astm.org.

See section IV.M for a further discussion of these standards.

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I. Authority and Background

Walk-in coolers and walk-in freezers (collectively, "walk-ins" or "WICFs") are included in the list of "covered equipment" for which the U.S. Department of Energy ("DOE" or "the Department") is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6311(1)(G)) A walk-in is defined as an enclosed storage space of less than 3,000 square feet that can be walked into and is refrigerated to prescribed temperatures based on whether the given unit is a cooler or a freezer. See generally 42 U.S.C. 6311(20). In simple terms, a walk-in is an insulated box (or envelope) serviced by a refrigerated system that feeds cold air to the box's interior. DOE's energy conservation standards and test procedures for walk-ins are currently prescribed at 10 CFR 431.306 and 10 CFR 431.304, respectively. The following sections discuss DOE's authority to establish test procedures and certification requirements for walk-ins and relevant background information regarding DOE's consideration of test procedures and certification requirements for this equipment.

A. Authority

Title III, Part C[1] of the Energy Policy and Conservation Act of 1975 ("EPCA" or, in context, "the Act"), Public Law 94-163 (codified as 42 U.S.C. 6311-6317, as codified) established the Energy Conservation Program for Certain Industrial Equipment, a program covering certain industrial equipment, including walk-ins, the subject of this document. (42 U.S.C. 6311(1)(G))

In general, this program addresses the energy efficiency of certain types of commercial and industrial equipment. Relevant provisions of the Act specifically include definitions (42 U.S.C. 6311), energy conservation standards (42 U.S.C. 6313), test procedures (42 U.S.C. 6314), labelling provisions (42 U.S.C. 6315), and the authority to require information and reports from manufacturers (42 U.S.C. 6316). Manufacturers of covered equipment must use the prescribed DOE test procedure as the basis for making representations to the public regarding the energy use or efficiency of such equipment. (42 U.S.C. 6314(d))

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA provides in relevant part that any test procedures prescribed or amended under this section shall be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and shall not be unduly burdensome to

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

conduct. See 42 U.S.C. 6293(b)(3) and 42 U.S.C. 6316(a) (applying 42 U.S.C. 6293 to walk-ins).

In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6293(b)(2)) Finally, in any rulemaking to amend a test procedure, DOE must determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1))

If adopted, manufacturers would be required to use the proposed test procedure and metric when making representations regarding the energy use of covered equipment 180 days after the publication date of any final rule for those walk-in cooler and walk-in freezers that are addressed by the test procedure. (42 U.S.C. 6314(d))

DOE anticipates proposing amended energy conservation standards for certain classes of refrigeration systems for walk-ins in a separate rulemaking. See Docket No. EERE-2015-BT-STD-0016.

B. Background

Section 312 of the Energy Independence and Security Act of 2007, Public Law 110-140 (December 19, 2007), required DOE to establish test procedures to measure the energy use of walk-in coolers and walk-in freezers. On April 15, 2011, DOE published test procedures for the principal components that make up a walk-in: the panels, doors,

and refrigeration systems. DOE took this component-based testing approach based on a significant body of feedback from interested parties that requiring a single test procedure for an entire walk-in would be impractical because most walk-ins are assembled on-site with components from different manufacturers. 76 FR 21580, 21582 (April 15, 2011).

On February 20, 2014, DOE initiated another test procedure rulemaking for walk-ins to clarify and modify the test procedures published in April 2011. DOE also proposed to revise the existing regulations for walk-ins to allow manufacturers to use an alternative efficiency determination method ("AEDM") to certify compliance and report ratings, after meeting certain qualifications. DOE published a supplemental notice of proposed rulemaking ("SNOPR) on February 20, 2014, soliciting public comments, data, and information on the test procedure modifications. 79 FR 9818. DOE published a final rule codifying the test procedure and AEDM provisions for walk-ins on May 13, 2014. 79 FR 27388.

DOE also published a notice of proposed rulemaking ("NOPR") to create new performance-based energy conservation standards for walk-ins on September 11, 2013. ("September 2013 NOPR") 78 FR 55782. That NOPR addressed the comments received in earlier stages of the rulemaking and proposed new energy conservation standards. In conjunction with the September 2013 NOPR, DOE published a technical support document ("TSD") to accompany the proposed rule along with engineering analysis spreadsheets, the government regulatory impact model ("GRIM") spreadsheet, the life cycle cost ("LCC") spreadsheet, and the national impact analysis ("NIA") spreadsheet. See Docket No. EERE-2008-BT-STD-0015. DOE proposed standards for eight dedicated

condensing classes of refrigeration systems, two multiplex condensing classes of refrigeration systems, three classes of panels, four classes of non-display doors, and two classes of display doors. (The refrigeration system standards use the metric “annual walk-in energy factor (“AWEF”), and the door standards use an energy use metric that incorporates thermal insulating ability and electrical energy used by the door. The panel standards are equivalent to those previously established and use a measurement of thermal insulation--or “R-value” -- to represent the energy efficiency of these components.) DOE published a final rule adopting these new standards on June 3, 2014. 79 FR 32050. Except for the equipment classes whose standards have been vacated, as described below, compliance with the standards adopted in the June 2014 final rule is required starting on June 5, 2017.

After publication of the 2014 Final Rule, the Air-Conditioning, Heating and Refrigeration Institute (“AHRI”) and Lennox International, Inc. (a manufacturer of walk-in refrigeration systems) filed petitions for review of DOE's final rule and DOE's subsequent denial of a petition for reconsideration of the rule (79 FR 59090 (October 1, 2014)) with the United States Court of Appeals for the Fifth Circuit. Lennox Int'l, Inc. v. Dep't of Energy, Case No. 14-60535 (5th Cir.). Other walk-in refrigeration system manufacturers—Rheem Manufacturing Co. (owner of Heat Transfer Products Group) and Hussmann Corp.—along with the Air Conditioning Contractors of America (a trade association representing contractors who install walk-in refrigeration systems) intervened on the petitioners' behalf, while the Natural Resources Defense Council ("NRDC")—representing itself, the American Council for an Energy-Efficient Economy, and the Texas Ratepayers' Organization to Save Energy—intervened on behalf of DOE. As a

result of this litigation, a settlement agreement was reached to address, among other things, six of the refrigeration system standards—the standards for low-temperature dedicated condensing equipment classes and both medium- and low-temperature multiplex condensing equipment classes.

A controlling court order from the United States Court of Appeals for the Fifth Circuit, issued on August 10, 2015, vacated those six standards. On November 12, 2015, DOE amended the CFR to reflect this order. As for the remaining standards promulgated by the June 2014 final rule – i.e. the (1) four standards applicable to dedicated condensing refrigeration systems operating at medium-temperatures, (2) three standards applicable to panels, and (3) six standards applicable to doors -- these standards were not vacated and remain subject to the June 5, 2017 compliance date prescribed in the June 2014 final rule. See 79 FR at 32051-32052 (Table I.1) and 32123-32124 (codified at 10 CFR 431.306(a), (c)-(e)).

To address the vacated standards, DOE established a working group to negotiate proposed energy conservation standards to replace them. Specifically, on August 5, 2015, DOE published a notice of intent to establish a Working Group for Certain Equipment Classes of Refrigeration Systems of Walk-in Coolers and Freezers to Negotiate a Notice of Proposed Rulemaking for Energy Conservation Standards (“Working Group”). 80 FR 46521. The Working Group was established under the Appliance Standards and Rulemaking Federal Advisory Committee ("ASRAC") in accordance with the Federal Advisory Committee Act ("FACA") and the Negotiated Rulemaking Act ("NRA"). (5 U.S.C. App. 2; 5 U.S.C. 561-570, Public Law 104-320.) The purpose of the Working

Group was to discuss and, if possible, reach consensus on proposed standard levels for the energy efficiency of the affected classes of walk-in refrigeration systems. The Working Group consisted of 12 representatives of parties having a defined stake in the outcome of the proposed standards and one DOE representative (see Table 1). The Working Group consulted as appropriate with a range of experts on technical issues. The Working Group met in-person during 13 days of meetings held between August 27 and December 15, 2015.

Table 1 Walk-in Refrigeration Systems Negotiated Rulemaking Working Group

Full Name	**Affiliation**
Ashley Armstrong	U.S. Department of Energy
Lane Burt	Natural Resources Defense Council
Mary Dane	Traulsen
Cyril Fowble	Lennox International, Inc.
Sean Gouw	CA Investor-Owned Utilities
Andrew Haala	Hussmann Corp
Armin Hauer	ebm-papst, Inc.
John Koon	Manitowoc Company
Joanna Mauer	Appliance Standards Awareness Project
Charlie McCrudden	Air Conditioning Contractors of America
Louis Starr	Northwest Energy Efficiency Alliance
Michael Straub	Rheem Manufacturing
Wayne Warner	Emerson Climate Technologies

On December 15, 2015, the Working Group reached consensus on, among other things, a series of energy conservation standards to replace those that were vacated as a result of the litigation. The Working Group assembled their recommendations into a single Term Sheet (See Docket EERE-2015-BT-STD-0016, No. 0052) that was presented to, and approved by the ASRAC on December 18, 2015. DOE anticipates proposing to adopt in a separate rulemaking document energy conservation standards consistent with

the Working Group's Term Sheet for those classes of walk-in refrigeration systems whose standards were vacated. See Docket No. EERE-2015-BT-STD-0016 for all background documents on the negotiated rulemaking.

While the Working Group's focus centered primarily on addressing the six energy conservation standards for low-temperature dedicated condensing equipment classes and both medium- and low-temperature multiplex condensing equipment classes, (see Docket No. EERE-2015-BT-STD-0016, No. 0001 and 0002), the Term Sheet also included recommendations that DOE consider making certain amendments involving the test procedure. These recommendations addressed technical corrections to the test procedure itself; definitions for certain terms to provide clarity regarding the applicability of the standards (and, relatedly, the test procedure); and other test procedure changes that the Working Group deemed necessary in order to implement the agreed-upon refrigeration system standards.[2] DOE considered the approved Term Sheet, along with other comments received during the negotiated rulemaking process, in developing several of the test procedure amendments that this document proposes to adopt.

[2] The recommended changes to the test procedure deal exclusively with efficiency measurement and certification for the classes of refrigeration systems that were the subject of the negotiations, and do not affect the test procedures for the refrigeration system standards that were not vacated. They specifically address removing test procedure provisions for hot gas defrost and requiring that certified efficiency levels for comparison to the standards for evaluation of compliance would not make use of the test procedure provisions for adaptive defrost or on-cycle variable-speed evaporator fans.

II. Synopsis of the Notice of Proposed Rulemaking

The proposed provisions fall into two groups. The first group consists of test procedure modifications and other additions to the regulatory text recommended by the Working Group and listed in the Term Sheet, including:

- Adding definitions for the terms "dedicated condensing unit," "dedicated condensing refrigeration system," "packaged dedicated system," "matched condensing unit," "matched refrigeration system," "outdoor dedicated condensing refrigeration system," "indoor dedicated condensing refrigeration system," "adaptive defrost," "process cooling," "preparation room refrigeration," and "refrigerated storage space," and modifying the definition of "refrigeration system;"
- Removing the method for calculating defrost energy and defrost heat load of a system with hot gas defrost; and
- Establishing a regulatory approach for refrigeration systems with adaptive defrost and/or on-cycle variable-speed evaporator fan control, that would require demonstration of compliance with the standard for any such unit to be based on testing without activation of these features, while allowing for representations of their improved performance when using these features.

The second group of proposed provisions consists of test procedure modifications and certification, compliance, and enforcement provisions that, while not part of the Term Sheet, are necessary for implementing the energy conservation standards. This group of proposed changes includes:

- Re-organizing the test procedure provisions in 10 CFR 431.304 for improved clarity, and correcting typographical errors in the rule language;
- Clarifying section 3.0 "Additional Definitions" in appendix A to subpart R of part 431;
- Modifying the current walk-in certification and reporting requirements in 10 CFR 429.53 to clarify applicability of walk-in test procedures to certain equipment classes and add provisions for reporting additional rating metrics;
- Adding walk-in refrigeration systems, panels, and doors to the list of products and equipment included as part of the enforcement testing requirements prescribed in 10 CFR 429.110(e)(2); and
- Adding labeling requirements for walk-in refrigeration systems, panels, and doors.

III. Discussion

This proposal stems from the detailed discussions and suggestions offered by Working Group participants during the walk-in negotiated rulemaking. These participants, in addition to providing detailed feedback for consideration in developing the energy conservation standards to replace those that were vacated, also offered detailed recommendations regarding the walk-in test procedures. These recommendations were offered as a means to address questions related to the treatment of certain types of features or components that may be present in a given walk-in refrigeration system. These aspects of the proposal, along with other elements involving the implementation of DOE's certification and labeling requirements and general obligations under EPCA, are addressed in the sections that follow. While DOE seeks

comment regarding all aspects of its proposal, section V.E includes a detailed list of specific issues on which DOE seeks comment.

A. Actions in Response to ASRAC Negotiated Terms

1. Definitions

The Working Group recommended that DOE define the terms "dedicated condensing unit," "matched condensing unit," and "outdoor condensing unit" (Term Sheet at EERE-2015-BT-STD-0016, No. 0056, recommendation #1); "adaptive defrost" (Term Sheet at EERE-2015-BT-STD-0016, No. 0056, recommendation #2); and "process cooling," "preparation room refrigeration," and "storage space" (Term Sheet at EERE-2015-BT-STD-0016, No. 0056, recommendation #7). DOE is also proposing to define the terms "dedicated condensing refrigeration system," "outdoor dedicated condensing refrigeration system," "indoor dedicated condensing refrigeration system," "matched refrigeration system," "unit cooler," and "packaged dedicated system" to supplement the Working Group-recommended definitions. These supplemental definitions were developed to help enhance the clarity of the walk-in regulatory framework and to assist manufacturers in readily ascertaining how to classify (and certify for compliance purposes) the myriad of refrigeration systems they produce. Finally, DOE is proposing to modify the current definition of refrigeration system to align it more closely with the terminology being defined here. The following sections address DOE's proposed definitions, all of which would appear in 10 CFR 431.302, if adopted. (The precise text for each of these definitions appears under the proposed regulatory text appearing at the end of this document.)

a. Dedicated Condensing Unit and Dedicated Condensing Refrigeration System

In the June 2014 final rule, DOE divided refrigeration systems into classes based on their treatment under the test procedure with respect to condensing unit configuration. 79 FR at 32069-32070. (denoting "dedicated condensing" equipment class standards as applying to systems consisting of (a) a dedicated condensing unit and a unit cooler, (b) a single-package system that includes an entire refrigeration system, and (c) stand-alone dedicated condensing units.) In a related test procedure final rule, DOE also revised the regulatory approach for dedicated condensing walk-in refrigeration systems by specifying that in those instances where a complete walk-in refrigeration system consists of a unit cooler and condensing unit that are sourced from separate manufacturers, each of those manufacturers (i.e., original equipment manufacturer or "OEM") is responsible for certifying the compliance of their respective components. See 79 FR 27388 (May 13, 2014) ("May 2014 test procedure rule"). Under this approach, the entity that combines and sells the matched-pair system consisting of the separately-sourced unit cooler and dedicated condensing unit need only ensure that the unit cooler and condensing unit, by themselves, have been certified by their respective manufacturers to meet the relevant energy conservation standard. The May 2014 test procedure rule also adopted testing methods to enable an OEM to readily test and rate a condensing unit individually.

Proper classification of condensing units by type is important because DOE has consistently held that the condensers and compressors of a multiplex condensing system are <u>not</u> covered by walk-in regulations. (See the September 2013 NOPR, 78 FR at 55801; see also Docket No. EERE-2011-BT-TP-0024, DOE, Public Meeting Transcript (October 22, 2014), No. 0117 at p. 21) DOE has not previously defined either dedicated

condensing unit or multiplex condensing equipment, and the Working Group recommended defining the former to clarify what equipment would be subject to condensing unit standards. Thus, as part of the negotiated terms, the Working Group recommended that DOE codify a definition for "dedicated condensing unit." (See Term Sheet, Docket No. EERE-2015-BT-STD-0016, No. 0056, Recommendation #1)

During the Working Group negotiation meetings, participants discussed several factors that may distinguish dedicated condensing equipment from multiplex condensing equipment. First, the Working Group discussed the components found in a dedicated condensing unit. Lennox recommended that a dedicated condensing unit should be a factory-made assembly that includes one or more compressors, a condenser, and one refrigeration circuit. (Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (October 16, 2015), No. 0063 at pp. 247-248) Lennox also clarified that it considered a single package refrigeration system (that is, a factory-made assembly consisting of one or more compressors, a condenser, and an evaporator) to be a type of dedicated condensing system. (Docket No. EERE-2015-BT-STD-0016, DOE and Lennox, Public Meeting Transcript (October 16, 2015), No. 0063 at pp. 249-251)

Second, the Working Group discussed how to treat a single assembly with multiple compressors and/or condensers. Lennox recommended that the definition also specify that a dedicated condensing system is designed to serve one refrigerated load. (Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (October 16, 2015), No. 0063 at pp. 247-248) Hussmann also noted that a dedicated condensing unit could be packaged with other dedicated condensing units, but could still be covered

as long as the individual unit has one refrigeration circuit. (Docket No. EERE-2015-BT-STD-0016, Hussmann, Public Meeting Transcript (October 16, 2015), No. 0063 at pp. 253-254) Lennox then clarified that, in its view, a single, stand-alone condensing unit would be considered a dedicated condensing unit, but so would a unit with multiple independent circuits, as well as systems with parallel pipe systems that serve one load. However, a unit with a common condenser coil with multiple refrigeration inlets would not be considered as a dedicated condensing unit. (Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (October 16, 2015), No. 0063 at pp. 256-257)

The proposed dedicated condensing equipment class definition addresses three refrigeration system configurations – (1) a dedicated condensing unit; (2) a packaged dedicated system; and (3) a matched refrigeration system. To emphasize this three-pronged approach, DOE proposes defining what a dedicated condensing refrigeration system is to clarify the scope of this equipment class. Consistent with Lennox's assertion that single package refrigeration systems are a type of dedicated condensing system, DOE is proposing to include this configuration in the proposed definition. DOE also proposes that a matched condensing system—consisting of a dedicated condensing unit that is distributed in commerce with one or more specific unit coolers—would also be treated as a kind of dedicated condensing system. (The following two sections discuss packaged dedicated systems and matched systems in more detail.) Finally, DOE proposes to include in the definition that a dedicated condensing system could consist of a dedicated condensing unit sold separately from any unit cooler. This proposed clarification underpins DOE's certification approach of allowing manufacturers to test and rate condensing units separately to certify compliance with the dedicated condensing

standard, without having to distribute their condensing units in commerce with one or more specific unit coolers.

Each of these elements is reflected in DOE's proposed definition for "dedicated condensing unit," which would require such a unit be a positive displacement condensing unit that is part of a refrigeration system (as defined in 10 CFR 431.302) and is an assembly that (1) includes 1 or more compressors, a condenser, and one refrigeration circuit and (2) is designed to serve one refrigerated load.

This definition omits the term "factory-made" from the definition to avoid suggesting that such an assembly is not a condensing unit (and thus not covered by DOE regulations) if it happens to be assembled from its subcomponents after shipment from the factory.

Additionally, for the reasons discussed in this preamble, DOE is proposing to define "dedicated condensing refrigeration system" as referring to a (a) dedicated condensing unit, (b) packaged dedicated system, or (c) matched refrigeration system.

DOE notes that the proposed definition would encompass a dedicated condensing system that may be part of an assembly or package that includes other equipment – an approach that is consistent with Hussmann's comment discussed earlier.

DOE requests comment on the proposed definitions for dedicated condensing unit and dedicated condensing refrigeration system.

b. Packaged Dedicated System

DOE is proposing to treat a packaged dedicated system as a type of dedicated condensing refrigeration system. These systems are factory-assembled equipment where the components serving the compressor, condenser, and evaporator functions are "packaged" into a single piece of equipment. The system is then installed as part of a walk-in application with the compressor and condenser located on the outside of the walk-in envelope (i.e., the boxed storage enclosure) and the evaporator on the inside. (When using such a system, the walk-in insulated enclosure is manufactured with a hole in the wall or ceiling in which the packaged system is mounted.) The use of this equipment is necessarily limited to small-capacity walk-ins due to load-bearing limitations of the walk-in envelope. DOE is proposing to define "packaged dedicated systems" by combining elements of the proposed definition for "dedicated condensing unit" (see section III.A.1.a) and the definition for "forced-circulation free-delivery unit cooler (unit cooler)" from AHRI-1250-2009. Consequently, DOE is proposing to define a "packaged dedicated system" as "a refrigeration system (as defined in 10 CFR 431.302) that is a single-package assembly that includes one or more compressors, a condenser, a means for forced circulation of refrigerated air, and elements by which heat is transferred from air to refrigerant, without any element external to the system imposing resistance to flow of the refrigerated air."

DOE requests comment on the proposed definition for packaged dedicated system.

c. Matched Condensing Unit and Matched Refrigeration System

During one of the initial Working Group meetings, DOE offered for consideration a definition for a matched condensing unit – specifically, to define this term as "a dedicated condensing unit that is distributed in commerce with one or more specific unit coolers." (Docket No. EERE-2015-BT-STD-0016, DOE, Public Meeting Transcript (October 15, 2015), No. 0062 at p. 138-139) In offering this definition, DOE intended to distinguish a matched condensing unit from an individually-sold condensing unit for testing purposes. (This distinction is critical since a matched system could be tested using the currently prescribed test method from AHRI 1250-2009 for variable-speed compressors, while an individually-sold dedicated condensing unit could not). The Working Group later recommended a modified version of this definition to indicate that the unit coolers matched to the condensing unit would be specified by the condensing unit manufacturer. That modified definition, which DOE is proposing to include as part of 10 CFR 431.302, would define a "matched condensing unit" as "a dedicated condensing unit that is distributed in commerce with one or more unit cooler(s) specified by the condensing unit manufacturer."

For completeness, DOE is also proposing to define "matched refrigeration system" (also called "matched pair") as "a refrigeration system including the matched condensing unit and the one or more unit coolers with which it is distributed in commerce."

DOE requests comments on the proposed definitions for matched condensing unit and matched refrigeration system.

d. Outdoor and Indoor Dedicated Condensing Refrigeration Systems

DOE currently distinguishes the dedicated condensing refrigeration system classes based on whether the condensing unit is located indoors or outdoors. 79 FR at 32069-32070. Building on this established foundation, DOE is proposing definitions for the terms "outdoor dedicated condensing refrigeration system" and "indoor dedicated condensing refrigeration system" to distinguish these classes of equipment for standards and rating purposes. Because outdoor systems are tested differently and generally have very different measured AWEF values than indoor systems, DOE believes that these class distinctions should be clearly defined.

In developing these definitions, DOE relied on the fact that outdoor condensing units use an outer casing to protect the unit's internal components from weather-related elements. During the negotiated rulemaking meetings, AHRI suggested that DOE include in the definition the phrase, "designed to be installed and operated outside the building envelope" so that adding a casing to a unit designed to be an indoor condensing unit (e.g., for purposes of fan protection) would not cause DOE to consider it as an outdoor condensing unit. (Docket No. EERE-2015-BT-STD-0016, AHRI, Public Meeting Transcript (December 15, 2015), No. 0060 at p. 137) DOE asked AHRI to identify design differences that could help DOE determine whether a certain condensing unit is designed for indoor or outdoor use. (Docket No. EERE-2015-BT-STD-0016, DOE, Public Meeting Transcript (December 15, 2015), No. 0060 at pp. 149-150) The Working Group ultimately agreed that an outdoor condensing system must be "capable of maintaining the

medium-temperature or low-temperature DOE test procedure box conditions (as specified in 10 CFR 431.304) for an extended period at the 35 °F outdoor temperature condition." (Term Sheet at EERE-2015-BT-STD-0016, No. 0056, Recommendation #1)

DOE considered the Term Sheet's recommendation and is proposing to clarify the recommendation in the context of the walk-in test procedure. First, the recommendation uses the terminology "maintaining the . . . box conditions" in describing an outdoor condensing system. DOE notes that during testing of walk-in refrigeration systems, the space occupied by the unit cooler is conditioned to the specified operating conditions (e.g., 35 °F for medium-temperature systems and -10 °F for low-temperature systems) regardless of the operation of the system being tested. Hence, the test room conditions would not necessarily deviate from these specified temperatures, which would be an indication that the refrigeration system under test is not capable of maintaining the box conditions. DOE proposes that determining whether the refrigeration system can maintain box conditions would be based on the measured net capacity for the system when operating at the 35 °F outdoor condition—specifically, DOE proposes that this net capacity must be no less than 65 percent of the net capacity when tested at 95 °F outdoor conditions for a unit to be considered an outdoor condensing system. DOE selected this comparison because the box loads specified for operation in a 35 °F outdoor condition in AHRI 1250-2009 for outdoor condensing systems during the high load period (Equation 3 for medium-temperature and Equation 7 for low-temperature) are equal to 65 percent of the net capacity measured for the 95 °F outdoor condition.

Second, DOE would clarify that "an extended period" would mean a period of no less than an hour. DOE notes that during testing of walk-in refrigeration systems, AHRI 1250-2009 requires that data be recorded for a period of at least 30 minutes after approaching steady state for at least 30 minutes at the specified test conditions (see section C3.6 in Appendix C of AHRI 1250-2009). Together, the 30 minutes taken to reach steady state and the 30 minutes of data recording time starting after steady state has been achieved add up to an hour of testing. While DOE would expect that an outdoor unit would be able to maintain the required capacity level for many hours, not just one, DOE believes that any inability to maintain this capacity (e.g., due to inability to maintain sufficient refrigerant pressure at the inlet to the expansion device to maintain adequate refrigerant flow) would already have manifested itself within an hour. This is because, for steady-state operation, the refrigerant in a walk-in refrigeration system would circulate through the system many times before an hour would have elapsed,[3] thus if it was going to be "held up" by the expansion valve due to insufficient refrigerant pressure, such an issue would have been observed long before the end of the hour.

Consistent with this approach, DOE is proposing to define an "outdoor dedicated condensing refrigeration system" as "a dedicated condensing unit, packaged dedicated system, or matched refrigeration system in which the assembly (including the compressor(s) and condenser) is encased and the system is capable of maintaining a net capacity at the 35 °F outdoor temperature condition that is no less than 65 percent of the

[3] For example, for a set of dedicated condensing systems tested by DOE, the range of time required for the refrigerant to circulate fully around the circuit (calculated as the refrigerant charge divided by the mass flow rate) averaged 3 minutes.

net capacity measured at the 95 °F outdoor temperature condition for a period of no less than one hour."

Although the Term Sheet originally recommended a definition for "outdoor condensing unit" to encompass certain dedicated condensing units and matched condensing units, DOE is proposing a slightly modified definition that expands the scope to packaged dedicated systems (defined in section III.A.1.b). DOE believes its proposed definition is consistent with the intent of the Working Group as expressed in the Term Sheet.

For completeness, DOE is also proposing to define an "indoor dedicated condensing refrigeration system" as "a dedicated condensing refrigeration system that is not an outdoor dedicated refrigeration system."

DOE requests comments on the proposed definitions for indoor and outdoor condensing units.

e. Unit Cooler

In addition to dedicated condensing systems, the definition of "refrigeration system" in 10 CFR 431.302 also includes unit coolers connected to a multiplex condensing system. DOE previously referred to this class of equipment as "multiplex condensing," abbreviated as "MC." However, manufacturers have indicated that unit

coolers can be installed in either dedicated condensing or multiplex condensing applications, and that most units that are shipped individually are installed in dedicated condensing systems. (See manufacturer-submitted Excel spreadsheet, Docket No. EERE-2015-BT-STD-0016, No. 0029, noting in column "K" that approximately 82 percent of unit coolers are used in dedicated condensing applications, while approximately 18 percent are used in multiplex condensing applications.) In the May 2014 test procedure rule, DOE implemented a certification approach where all unit coolers sold separately (that is, not distributed in commerce as part of a matched-pair system) must be tested and rated as part of the multiplex condensing system class. However, as mentioned in this preamble, these unit coolers could be installed in either dedicated condensing or multiplex condensing applications. The multiplex condensing unit itself is not covered by the standard (as discussed in section III.A.1.a), which could create confusion if the "multiplex condensing" reference were to continue to be used. To align its terminology with the actual use of this equipment, DOE is proposing to drop the term "multiplex condensing" and re-name this class of equipment as "unit coolers" (i.e. "UC").

In section 3.3 of AHRI 1250-2009, the test procedure incorporated by reference (see 10 CFR 431.303), unit coolers (or, more specifically, "Forced-Circulation Free-Delivery Unit Coolers (Unit Coolers)") are defined as "[a] factory-made assembly, including means for forced air circulation and elements by which heat is transferred from air to refrigerant without any element external to the cooler imposing air resistance. These may also be referred to as Air Coolers, Cooling Units, Air Units or Evaporators." DOE believes this definition for "unit coolers" is appropriate. However, due to the importance of the term "unit cooler" in the walk-in regulations, DOE proposes to add a

definition in its test procedure using nearly the same text that currently is used in AHRI 1250-2009. DOE proposes to remove the term "factory-made" from the definition to avoid suggesting that such an assembly is not a unit cooler (and thus not covered by DOE regulations) if it happens to be assembled from its subcomponents after shipment from the factory (similar to the approach taken for "dedicated condensing unit" as described in section III.A.1.a). Unit coolers would be treated as covered equipment since they would continue to fall within the definition for "refrigeration system" as discussed in the next section.

DOE requests comment on its proposal to change the "multiplex condensing" class designation to "unit cooler" and on its proposal to add a definition for "unit cooler" in the CFR, using the definition that currently is in AHRI 1250-2009.

f. Refrigeration System

For purposes of clarity, DOE is proposing to modify the current definition of "refrigeration system" in 10 CFR 431.302 to align it with the new definitions discussed earlier. "Refrigeration system" is currently defined as "the mechanism (including all controls and other components integral to the system's operation) used to create the refrigerated environment in the interior of a walk-in cooler or freezer, consisting of: (1) A packaged dedicated system where the unit cooler and condensing unit are integrated into a single piece of equipment; or (2) A split dedicated system with separate unit cooler and condensing unit sections; or (3) A unit cooler that is connected to a multiplex condensing system." DOE is proposing to consolidate and re-word clauses (1) and (2) in the current definition to refer to the new, proposed definition for "dedicated condensing system." As

the proposed definition for “dedicated condensing system” encompasses both packaged dedicated systems and matched refrigeration systems consisting of a dedicated condensing unit and one or more unit coolers, DOE believes the term “dedicated condensing system” can replace clauses (1) and (2) in the proposed definition without reducing the overall scope of coverage. This replacement will also serve to clarify that a dedicated condensing unit can also be considered a refrigeration system, as the proposed definition of “dedicated condensing system” includes dedicated condensing units.

DOE is also proposing to remove the specification “that is connected to a multiplex condensing unit” from clause (3) of the current definition. As discussed in the previous section, walk-in unit coolers can be installed in either dedicated condensing or multiplex condensing applications, and most that are shipped individually are installed in dedicated condensing systems. DOE does not intend to imply that only walk-in unit coolers installed in multiplex condensing applications are covered, because walk-in unit coolers are covered under the standard regardless of whether they are ultimately installed in dedicated condensing or multiplex condensing applications.

The modified definition of “refrigeration system” would define this term as “the mechanism (including all controls and other components integral to the system’s operation) used to create the refrigerated environment in the interior of a walk-in cooler or freezer, consisting of: (1) A dedicated condensing refrigeration system (as defined in 10 CFR 431.302); or (2) A unit cooler.”

DOE requests comment on the proposed modifications to the definition of refrigeration system.

g. Adaptive Defrost

The May 2014 test procedure rule implemented a credit for systems having an adaptive defrost system that manufacturers could use in lieu of testing the adaptive defrost feature using the relevant provision in AHRI 1250-2009, incorporated by reference in the DOE test procedure, when calculating the efficiency of their refrigeration systems. (See 10 CFR 431.304(c)(10)(ix)) Manufacturers, however, expressed concerns that DOE had not adequately defined "adaptive defrost" and that the test procedure could permit a manufacturer to claim the energy efficiency credit for systems with this feature even if those systems may not necessarily yield the efficiency performance improvement consistent with the credit provided by the test procedure. (See discussions at Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (September 11, 2015), No. 0061 at p. 0087; and Docket No. EERE-2015-BT-STD-0016, Lennox and Rheem, Public Meeting Transcript (September 30, 2015), No. 0067 at pp. 138-144) To address this issue, DOE offered a definition for "adaptive defrost" for the Working Group to consider during the negotiated rulemaking. In particular, during the October 15, 2015 public meeting, DOE suggested revising the definition for adaptive defrost to refer to a defrost control system that reduces defrost frequency by initiating defrosts or adjusting the number of defrosts per day in response to operating conditions (e.g., moisture levels in the refrigerated space, measurements that represent coil frost load) rather than

initiating defrost strictly based on compressor run time or clock time, such that the time interval between defrosts is at least 12 hours when operating in a space maintained at -10 ˚F and less than 50% relative humidity. (See public meeting presentation, Docket No. EERE-2015-BT-STD-0016, No. 0027 at p. 7)

Commenting on this definition, AHRI, Hussmann, and Lennox questioned whether DOE should specify a time interval between defrosts. Lennox and Hussmann believed that the additional clarification for the time interval was not a necessary part of the definition, while AHRI observed that if adaptive defrost is defined based on a response to moisture levels, the definition should not also indicate defrost frequency because this would effectively make the definition time-based. Hussmann added that a defrost controller may meet the time interval but not function well (a sentiment later reiterated by KeepRite). (Docket No. EERE-2015-BT-STD-0016, AHRI, Hussmann, and Lennox, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 143-145; Keeprite, Public Meeting Transcript (October 15, 2015), No. 0062 at p. 153) Rheem suggested that the adaptive defrost could be dependent on the heat load. (Docket No. EERE-2015-BT-STD-0016, Rheem, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 146) ASAP noted that it was important to verify that an adaptive defrost system is saving energy, but Lennox pointed out that doing so would require the test procedure to be revised to validate the savings of an adaptive defrost system versus a standard defrost approach. ASAP then replied that DOE could specify that the manufacturer is not required to perform the test, but the method could provide a way for DOE to verify performance of the system (Docket No. EERE-2015-BT-STD-0016, ASAP and Lennox, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 146-

149) Hussmann then asked whether a mechanism that shortened defrost duration would be considered demand defrost, but DOE noted that the effect of this would be captured during the regular defrost test, and AHRI agreed that reducing the time of the defrost would not be counted under the definition. (Docket No. EERE-2015-BT-STD-0016, Hussmann and AHRI, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 152-156) National Coil suggested that the definition should replace the phrase "response to operating conditions" with "response to frosting conditions," but DOE noted that the definition was not intended to restrict the technology that manufacturers would use to determine when a defrost is necessary. (Docket No. EERE-2015-BT-STD-0016, National Coil, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 159-160) The Working Group was unable to agree on a definition at the time and postponed further discussion until a future meeting.

In the November 3 meeting, several Working Group members and other attendees provided further input on the definition for adaptive defrost. AHRI indicated that the definition should be consistent with the approach followed for heat pumps and require that the unit should sense an actual need for a defrost instead of being based on time. (Docket No. EERE-2015-BT-STD-0016, AHRI, Public Meeting Transcript (December 3, 2015), No. 0057 at p. 131) While AHRI did not specify the type of heat pumps it was referencing, DOE notes that the current test procedure for central air conditioners and heat pumps includes a definition for "demand-defrost control system," which requires the controls to monitor and record at least once for every ten minutes of compressor on-time during space heating.one or more parameters that always vary with the amount of frost accumulated (See 10 CFR 430, subpart B, appendix M, sec. 1). Emerson raised the issue

of how to assign an adaptive defrost credit if the unit cooler and condensing unit were sold separately and argued that the definition should cover the case where the sensors and communication board are on the unit cooler and the system's processing power (i.e., decision-making) is located on the condensing unit. Lennox and AHRI agreed that it would not be necessary for both components to have all of the necessary features for the system as a whole to have adaptive defrost capability, and Hussmann noted that some systems have all of the necessary components on the unit cooler. Emerson and Rheem then questioned how the condensing unit could receive credit for the system having adaptive defrost ability in this case, when the manufacturer would not know whether it was going to be paired with a unit cooler that has the capability for using adaptive defrost. Rheem noted that, in this situation, any components that the manufacturer included on the condensing unit would ultimately be unused. (Docket No. EERE-2015-BT-STD-0016, AHRI, Lennox, Emerson, Rheem, and Hussmann, Public Meeting Transcript (December 3, 2015), No. 0057 at pp. 132-140) Hussmann then suggested that the manufacturer of the condensing unit could show that the unit has adaptive defrost compatibility with a note in the instruction manual or a sticker on the unit, but ASAP expressed concern that the condensing unit could, in spite of the instructions, be installed with a unit cooler that does not have adaptive defrost capability. (Docket No. EERE-2015-BT-STD-0016, Hussmann and ASAP, Public Meeting Transcript (December 3, 2015), No. 0057 at pp. 142-144)

As discussed in section III.A.2.b, the Working Group agreed, and DOE is separately proposing, that manufacturers should rate their systems for compliance purposes without the adaptive defrost credit, but that the test procedure would continue to

retain its current method for calculating the benefit of adaptive defrost to permit manufacturers to make representations of system efficiency with this feature included. After settling on this approach, the Working Group agreed on a definition of adaptive defrost without resolving the question of how DOE would verify that a unit cooler or condensing unit has adaptive defrost capability. Consistent with the Term Sheet, DOE proposes to define "adaptive defrost" as "a defrost control system that reduces defrost frequency by initiating defrosts or adjusting the number of defrosts per day in response to operating conditions (e.g., moisture levels in the refrigerated space, measurements that represent coil frost load) rather than initiating defrost strictly based on compressor run time or clock time." See Docket No. EERE-2015-BT-STD-0016, Public Meeting Transcript (December 15, 2015), No. 0060 at p.157.

The proposed definition does not specify which features must be included on (or with) the unit cooler or condensing unit; based on the discussion outlined in this preamble, features may not be consistent across manufacturers or installed systems. Also in accordance with Working Group recommendations discussed earlier in this section, the proposed definition specifies that the defrost is initiated based on operating conditions and not on time. Although the proposed definition lists some examples of operating conditions, it does not prescribe which conditions the controller must rely on to initiate the defrost.

DOE requests comment on the proposed definition for adaptive defrost.

h. Process Cooling, Preparation Room Refrigeration, and Storage Space

The statutory definition of a walk-in cooler is "an enclosed storage space refrigerated to temperatures, respectively, above, and at or below 32 degrees Fahrenheit that can be walked into, and has a total chilled storage area of less than 3,000 square feet; however, the terms do not include products designed and marketed exclusively for medical, scientific, or research purposes." (42 U.S.C. 6311(20)) The use of the term "storage space" in the definition raises questions about which refrigerated spaces would qualify as a "storage space" and thereby comprise equipment subject to the walk-in standards.

To address this ambiguity, Working Group meeting participants asked DOE to add definitions to help clarify certain refrigeration system applications. (See manufacturer-submitted material at Docket No. EERE-2015-BT-STD-0016, No. 0006 at p. 2 and Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (August 27, 2015), No 0015 at pp. 96-97; and Docket No. EERE-2015-BT-STD-0016, AHRI, Public Meeting Transcript (December 15, 2015), No. 0060 at pp. 141-142) As part of the negotiated terms, DOE agreed to create walk-in-specific definitions for "process cooling," "preparation room refrigeration," and "storage space." (See Term Sheet at EERE-2015-BT-STD-0016, No. 0056, Recommendation #7) In the following paragraphs, DOE discusses its proposed definitions for these terms.

<u>Process Cooling</u>

Interested parties first asked DOE to clarify the applicability of standards to certain types of process cooling refrigeration systems during the initial rulemaking that

culminated in the June 2014 final rule. In the preamble to that final rule, DOE clarified that blast chillers and blast freezers (which it considered types of process cooling) would not be required to meet the walk-in standards. At the time, DOE explained its understanding that the description contained in that document was sufficiently clear to enable manufacturers to readily determine whether a particular device they produce would be subject to the standards. DOE further noted that equipment used solely for process cooling applications is generally excluded from the standards, but that it could not categorically exclude from coverage any products used for both process and storage applications. 79 FR at 32068.

At a subsequent public meeting that DOE held in October 2014 to clarify aspects of the test procedure, DOE again stated that blast chillers and blast freezers did not fall within the scope of the energy conservation standards established for walk-ins in the June 2014 final rule. However, DOE acknowledged at the time that it did not have a definition for "process" cooling in the context of walk-ins. (Docket No. EERE-2011-BT-TP-0024, Heatcraft and DOE, Public Meeting Transcript (October 22, 2014), No. 0117 at pp. 61-63)

DOE has considered process cooling more carefully in light of the Working Group's request to develop clarifying definitions. DOE concludes that its initial statements in the 2014 final rule that blast chillers and blast freezers are not walk-ins were in error. DOE now believes that these categories of equipment, referred to as "process cooling equipment" do fall under the EPCA definition for walk-ins and are, for the reasons that follow, subject to standards. DOE notes that it is proposing an approach

for process cooling equipment that differs from the component-based approach that applies to other walk-ins.

In again reviewing DOE's treatment of process cooling, DOE first considered whether process cooling equipment that resembles walk-ins are indeed walk-ins as defined by EPCA. DOE has tentatively determined that certain equipment marketed as blast chillers and/or blast freezers (and discussed in the context of this rulemaking as process cooling equipment (see, e.g., 79 FR at 36067 (June 3, 2014)) meet the requirements for walk-in coolers and freezers under the EPCA definition. EPCA defines "walk-in" as an "enclosed storage space." (42 U.S.C. 6311(20)(A)) However, the statute does not define "storage" and provides no minimum duration for a stored item to remain within the walk-in to qualify as storage. As noted earlier, the Working Group asked DOE to develop a definition for "storage space," which indicates that there is not necessarily a clear distinction between storage space and process space in the context of walk-in coolers and walk-in freezers.

In applying the statute's use of the term "storage space," the key question is whether the use of a blast chiller's refrigerated space for rapid pulldown of the temperature of the contents placed within the enclosure, in and of itself, excludes the internal space from being considered storage space. On one hand, the contents are being acted upon rather than simply passively sitting. On the other hand, these contents are also placed in the space for a certain period of time, i.e., the contents are placed in the space for later access. In the June 2014 final rule, DOE referenced a period of 90 minutes when discussing the difference between process equipment and walk-ins. See 79

FR at 32068. DOE considered whether the referenced time period is appropriate to distinguish between a storage and process cooling application. DOE has tentatively determined, however, that the duration of time that contents are stored in the equipment is not an appropriate means for excluding certain equipment from the definition of walk-in cooler or walk-in freezer because there is no clear standard demarcating a boundary between what does and does not constitute storage. To the extent that this equipment is an enclosed refrigerated space that can be used to retain goods for an unspecified period of time and can be walked into with a chilled area less than 3,000 square feet and is not designed and marketed exclusively for medical, scientific, or research purposes, even if the goods are being interacted with/upon while in the chilled area (see 42 U.S.C. 6311(20)), DOE now considers this equipment to be a walk-in. Hence, DOE is clarifying that process cooling equipment, including blast chillers and blast freezers, fall within the statutory definition for walk-in coolers and freezers.

In light of this clarification of how process-cooling applications fit within the EPCA definition of WICF, DOE also reviewed the applicability of the statutory standards for the three primary walk-in components. Currently, panels, doors, and refrigeration systems must meet statutorily prescribed standards as set forth in 42 U.S.C. 6313(f) (codified at 10 CFR 431.306(a)-(b)). These statutorily prescribed standards apply to all regulated walk-in components used in any equipment that meets the definition of a WICF regardless of its end-use application – subject to the exceptions already noted in the definition. Consequently, DOE is also clarifying in this rulemaking that WICF panels, doors, and refrigeration systems used in process cooling applications are subject to the

statutory design standards and these components must be certified as compliant with the applicable WICF component-based standard.

Since DOE previously erred in indicating that WICFs used exclusively for process-cooling such as blast chilling and freezing are not subject to walk-in regulations, DOE recognizes that manufacturers may require time to comply with the statutorily prescribed walk-in requirements. Consequently, WICF components used in process-cooling WICFs and process-cooling WICFs manufactured prior to the final rule would not be held to the statutory standards. Further, DOE will exercise its enforcement discretion for 60 days after publication of the final rule, to allow manufacturers of WICF components that are used exclusively in process cooling applications to comply and to certify compliance with the applicable statutory standard. DOE believes that WICF panels and doors would already comply with the statutorily prescribed standards because there are no door or panel designs exclusively associated with process cooling equipment. Accordingly, none of these components would have been impacted by DOE's prior views regarding process cooling equipment. However, DOE understands that refrigeration systems used in process cooling equipment such as blast chilling and freezers have a specific set of operating requirements that could require some level of redesign to enable them to comply with the statutorily prescribed standards. DOE seeks comment on the enforcement discretion timeframe from manufacturers of WICF refrigeration systems used in process cooling applications including any associated rationale about the level of redesign needed to comply with the EPCA standards.

In addition, DOE adopted a component-based regulatory approach for walk-ins when it evaluated amended energy conservation standards for WICFs in the July 2014 final rule. Rather than developing standards applicable to the entire walk-in cooler or freezer, DOE established performance-based standards for components, including panels, doors, and refrigeration systems. As part of this clarification, DOE considered whether these component-level standards apply to process cooling equipment.

As noted in this preamble, DOE does not consider the panels and doors of process refrigeration walk-ins to be unique from those of other walk-ins. DOE is unaware of any differences between the doors and panels used with standard walk-ins and those walk-ins used with process cooling applications, and the analysis for these components supporting the June 2014 final rule standards included all such panels and doors without regard to the application in which they were installed. Furthermore, DOE has no information suggesting performance requirements for these groups of equipment differ from each other based on application. Specifically, the rapid temperature pull-down associated with process equipment does not impose performance requirements on the panels and doors that are any different than the requirements for panels and doors of other walk-ins. Consequently, DOE considers the efficiency performance standards for doors established in the 2014 final rule to apply to WICFs used in process refrigeration applications.

However, DOE recognizes that process cooling refrigeration systems can be distinct from the refrigeration systems of other walk-ins. Specifically, process cooling refrigeration systems must be able to rapidly cool down and/or freeze the contents of a process cooling walk-in. In order to achieve rapid cooldown, process cooling WICF

refrigeration systems have unique characteristics such as a higher refrigeration capacity on a per volume basis and unit cooler designs that extend nearly the full height of the WICF allowing the discharge air to directly impinge on the product being cooled to enhance heat transfer. The temperature change demanded of process cooling refrigeration systems must be accomplished within a certain amount of time that is governed by restraints such as health regulations that require rapid cool-down of cooked food. This rate of cool-down typically cannot be achieved by the types of walk-in refrigeration systems addressed by DOE's rulemakings to date. Consequently, DOE expects that at least some process cooling refrigeration systems would be unable to meet the walk-in standards, which are based on the performance of refrigeration systems designed for storage applications requiring that a specific temperature level be maintained. The characteristics of this process cooling equipment and the basis for the proposed "process cooling" definition is discussed in greater detail in the discussion that follows. DOE views equipment meeting this definition as exempt from the walk-in refrigeration system standards -- both those established in the June 2014 final rule and those that DOE is proposing as part of a separate rulemaking to address the vacated standards mentioned elsewhere in this document.

Blast chillers and blast freezers are examples of process cooling WICFs. Although there are other types of refrigeration that could be considered process cooling -- for example, spiral chillers and freezers (where food is moved on a conveyor belt in a spiral around a central multi-directional cooling unit) -- these other types are unlikely to be mistaken for a refrigeration system that would be subject to the walk-in standards because of clear and observable differences in physical configuration, for this example,

the spiral conveyor for the food products of a spiral freezer resembles none of the subcomponents of other walk-ins. On the other hand, blast chillers and blast freezers superficially resemble other walk-ins in outside appearance and physical size – factors that make it plausible that these equipment might, without clarification from DOE, be considered as covered by the walk-in standards. Thus, DOE attempted to identify characteristics of blast chillers and blast freezers that would clearly distinguish them from other walk-ins that must meet the applicable refrigeration system standards.

One clear distinguishing characteristic is that the refrigeration system capacity of a blast chiller or freezer is much higher relative to the internal volume of the enclosure as compared to other typical walk-ins. This is because the refrigeration load includes the large load associated with the required rapid cool-down of the product. In situations where the refrigeration system is distributed in commerce with the rest of the blast chiller or freezer components, it is easy to distinguish the refrigeration system from those of other typical walk-ins on the basis of capacity versus cabinet size, because, for this situation, both the capacity and the cabinet size would be known. Therefore, DOE's proposed definition for process cooling includes a minimum ratio of capacity versus cabinet size in cases where the refrigeration system is distributed in commerce with the cabinet.

However, in cases where the refrigeration system is distributed separately and, consequently, the cabinet size may not be known, this definition would be insufficient. Hence, the ideal definition would also include a way to determine whether the process cooling refrigeration system <u>on its own</u> is distinct from those of other typical walk-ins

that are shipped without their associated enclosures. DOE researched blast chiller and freezer data and found that when evaluated independently of the cabinet size, refrigeration capacities for certain blast chillers and freezers fall within the range of capacities of other walk-in refrigeration systems. Thus, it does not appear that process cooling refrigeration systems can be distinguished based on refrigeration capacity alone in cases where the refrigeration system is distributed separately from the enclosure.

For this reason, DOE also identified physical characteristics of blast chiller and blast freezer refrigeration systems that would distinguish them from other refrigeration systems. First, some blast chiller and freezer refrigeration systems consist of separate coil and fan assemblies, with the coil and the fan placed during installation on opposite sides of the enclosure to more evenly distribute the airflow. These types of systems would be excluded from the standards because the equipment would not meet the proposed definition of a unit cooler—that is, a single assembly that includes the fan(s) and coil(s). See section III.A.1.e regarding DOE's proposed "unit cooler" definition. Second, for those blast chiller and freezer refrigeration systems for which a single factory-assembled unit houses the fans and evaporator coil, these systems are also distinct from unit coolers subject to the walk-in standards in that they have a height that nearly fills the vertical dimension of the insulated enclosure and have fans that are stacked on top of each other to blow air directly onto the items being chilled or frozen. In comparison, unit coolers used in other walk-ins have a limited vertical dimension and have fans oriented side-by-side in the direction of the unit's width (or have only one fan). These unit coolers are also generally installed so that they blow air over the top of the stored items—the height of this space in a walk-in may not be very high (in order to maximize use of the available

space) – hence, the unit coolers and their fans are oriented horizontally instead of vertically. Consistent with these findings, the proposed process cooling refrigeration definition incorporates a qualifier on the physical dimensions of the unit cooler.[4]

DOE notes that the physical distinctions it found apply only to the unit cooler and not to the condensing unit. DOE has found no evidence that condensing units used with blast chillers and freezers are materially different from those used with other refrigerated enclosures or that these condensing units have features that would make them unable to meet a walk-in standard for dedicated condensers.

For the reasons outlined in this preamble, DOE proposes to define "walk-in process cooling refrigeration system" as "a refrigeration system that is used exclusively for cooling food or other substances from one temperature to another. A process cooling refrigeration system must either (1) be distributed in commerce with an enclosure consisting of panels and door(s) such that the assembled product has a refrigerating capacity of at least 100 Btu/h per cubic foot of enclosed internal volume, or (2) be a unit cooler having an evaporator coil that is at least four-and-one-half (4.5) feet in height and whose height is at least one-and-one-half (1.5) times the width." This proposed definition would cover both process cooling systems that are distributed in commerce as part of a complete assembly, process cooling unit coolers that are distributed separately from the

[4] DOE is not proposing to distinguish process cooling refrigeration systems on the basis of evaporator fan power, evaporator air velocity, or evaporator air flow, which are generally higher for these systems as compared with unit coolers used predominately in other walk-ins. Evaporator fan power, velocity, or air flow of a unit cooler could be atypically high for a number of reasons, including the use of inefficient fans or motors, long air "throw" distance, and other factors. Consequently, an approach based on the evaporator's fan power, air velocity, or air flow alone would be inadequate to consistently distinguish process cooling from other refrigeration systems.

enclosure, and refrigeration systems including unit coolers meeting the process cooling definition.

These exclusions would apply to (a) refrigeration systems sold as part of a complete package, including the insulated enclosure, and the refrigeration system for which the capacity per volume meets the proposed process cooling definition, (b) dedicated condensing systems sold as a matched pair in which the unit cooler meets the requirements of the proposed process cooling definition, and (c) unit coolers that meet the requirements of the proposed definition. DOE intends to propose specific regulatory language expressing these exclusions as part of its concurrent energy conservation standards rulemaking. However, because having a clear way to differentiate process cooling equipment from other walk-ins is essential to ensure clarity for manufacturers with regard to whether the equipment it manufactures would need to satisfy an applicable energy conservation standard, DOE seeks comment on the proposed definition and any additional information that would help to delineate this equipment more clearly.

DOE does not intend for the proposed process cooling definition to have the effect of excluding process cooling refrigeration from the definition of a walk-in cooler or freezer. Process cooling refrigeration systems would remain subject to other walk-in-related regulations, such as the labeling requirements discussed in section III.B.5 that DOE is considering, along with the prescriptive requirements for walk-ins already prescribed by Congress in EPCA. See 42 U.S.C. 6313(f). A complete process cooler would also need to be assembled using panels and doors that comply with the applicable requirements. See 42 U.S.C. 6313(f) and 10 CFR 431.306. DOE may also examine the

possibility of regulating the energy efficiency of process cooling refrigeration systems at a later date, but consideration of such regulation would also include consideration of alternative test procedures and/or equipment classes to address the different operating and energy use characteristics of this equipment.

DOE requests comment on the definition for process cooling refrigeration system. DOE also requests data or information on any other qualities, characteristics, or features specific to the refrigeration system itself (either mentioned in this section or not) that would clearly distinguish process refrigeration from other refrigeration systems or would cause a certain process refrigeration system to be unable to meet a walk-in refrigeration system standard. DOE particularly requests data for condensing units distributed individually; in the absence of any evidence that individual condensing units designed for process refrigeration are fundamentally different from other individual condensing units, DOE will have no basis for excluding such condensing units from the scope of the standards. Further, DOE requests comment on the proposal to allow 60 days after publication of the final rule for manufacturers of process cooling refrigeration systems to attain compliance with the applicable regulations.

Preparation Room Refrigeration

During the public meeting that DOE held in October 2014 to clarify aspects of the test procedure, Heatcraft, a refrigeration system manufacturer, asked whether preparation rooms are also excluded from the definition of walk-ins. DOE could not at the time determine whether refrigeration systems designed for this application should be

categorically excluded. (Docket No. EERE-2011-BT-TP-0024, Heatcraft, Public Meeting Transcript (October 22, 2014), No. 0117 at pp. 61-63)

DOE further investigated this refrigeration application as part of its effort to define "preparation room refrigeration" in accordance with the Term Sheet. Commercial and industrial food sales and food service establishments often prepare food (primarily meat) in spaces that are refrigerated and can be walked into, making the distinction between these spaces and walk-ins unclear. Similar to the process refrigeration definition discussed earlier, DOE sought to identify characteristics of preparation room refrigeration equipment that would distinguish it from walk-in refrigeration equipment. An engineering manual published by Heatcraft notes that preparation room refrigeration loads are sized to account for personnel and processing equipment; the evaporator "should be [a] low outlet velocity type to avoid drafts and should be selected for continuous operation and not less than 30 °F evaporator temperature." (Docket No. EERE-2016-BT-TP-0030, No. 0001 at p. 19) A manufacturer had also commented during the previous rulemaking (ending in the June 2014 final rule) that meat processing rooms in particular have electric or hot gas defrost even when they are designed for room temperatures above 32 degrees Fahrenheit. (Docket No. EERE-2008-BT-STD-0015, Hussmann, No. 0093 at p. 9)

Based on these characteristics, DOE is proposing to define "preparation room refrigeration" as referring to "a unit cooler that is designed for use in a room occupied by personnel who are preparing food and that is characterized by low outlet air velocity,

evaporator temperature between 30 and 55 degrees Fahrenheit, and electric or hot gas defrost."

While DOE is proposing to define this type of refrigeration system, this equipment would not be exempt from the applicable standards under this proposal. Some of the system's characteristics, such as low air velocity and a relatively high evaporating temperature, do not clearly distinguish this type of refrigeration from other types used in walk-ins subject to standards. Furthermore, DOE has not found evidence that this refrigeration system would have undue difficulty meeting a standard when rated using the DOE test procedure. Although these units may have electric or gas defrost, their operating temperature would place them in the medium-temperature class, and the test procedure (both the current test procedure and the test procedure as proposed in this notice) adds no energy use associated with defrost for medium-temperature systems. Thus, the defrost energy would not be measured under the test procedure and not be factored into the unit's rating.

DOE requests comment on the proposed definition for preparation room refrigeration. DOE requests comment on any other characteristics of preparation room refrigeration that (1) clearly distinguishes it from walk-in refrigeration systems <u>and</u> (2) would cause this equipment to be unable to meet a walk-in refrigeration standard.

<u>Storage Space</u>

Finally, consistent with the Term Sheet, DOE is proposing to define "refrigerated storage space" in the context of the current definition for a walk-in as follows: the term

“refrigerated storage space” would be defined to mean “a space held at refrigerated (as defined in 10 CFR 431.302) temperatures.” DOE is aware that this definition does not delineate a difference between equipment that is subject to standards and equipment that is not subject to standards, but believes that the previous discussions on process refrigeration and preparation room refrigeration sufficiently indicate what types of equipment are or are not subject to standards.

DOE requests comment on the proposed definition for “refrigerated storage space.” DOE requests comment on whether any further clarification is needed to clearly distinguish equipment that is subject to the standard from equipment that is not.

2. Refrigeration System Test Procedure Modifications

a. Hot Gas Defrost

DOE proposes to amend the current test procedure by removing the method for calculating the defrost energy and heat load of a system with hot gas defrost. The May 2014 test procedure rule established a calculation to represent the efficiency improvement of hot gas defrost as a credit applied to any low-temperature refrigeration system that has the feature. The amended test procedure did not include a test method for validating the performance of this feature. Instead, the method applied standardized values for the energy use and heat load associated with hot gas defrost in the calculations to determine AWEF. See 79 FR at 27400 (May 13, 2014). During the first Working Group meeting, Lennox (representing a caucus of manufacturers) requested that DOE remove hot gas

defrost as a design option in the energy conservation standard analysis for a number of reasons, including (a) the lack of any method for measuring the true energy benefit of this feature, (b) the lack of test data and research supporting the energy credit in the DOE test procedure, (c) installation and serviceability issues such as an increase in refrigerant leaks, and (d) energy penalties for hot gas defrost in installed systems that would not be captured in the test procedure credit. (Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (August 27, 2015), No. 0015 at pp. 94-95; see also manufacturer-submitted material at Docket No. EERE-2015-BT-STD-0016, Working Group Meeting Materials, No. 0006 at p. 1) In a subsequent meeting, other members of the Working Group again noted that there was a lack of data to support the credit. (Docket No. EERE-2015-BT-STD-0016, Rheem, Public Meeting Transcript (September 11, 2015), No. 0061 at p. 40-41 and Lennox, id. at pp. 44-46) Hussmann also claimed that DOE's assigned value of zero energy use for hot gas defrost in multiplex condensing systems was not correct because hot gas defrost would affect the system's energy efficiency ratio ("EER"). Hussmann noted that the EER in the test procedure is based on a system with electric defrost, but systems with hot gas defrost may experience a reduction in the overall system efficiency.[5] (Docket No. EERE-2015-BT-STD-0016, Hussmann, Public Meeting Transcript (September 11, 2015), No. 0061 at p. 42) (See also manufacturer-submitted comments (Docket No. EERE-2015-BT-STD-0016, No. 0008 at pp. 15-17)

[5]Depending on how hot gas defrost is implemented in a multiplex system, there are a number of factors which could cause additional energy use in the system and/or increase head pressure, which would reduce the EER of the system and therefore indirectly increase the overall system energy use.

At the September 30, 2015 Working Group meeting, DOE presented test data and additional analysis in response to Working Group member concerns. The data and analysis showed that the credit for hot gas defrost in the test procedure is consistent with the measured benefit for a condensing unit operating in an ambient air temperature of 90 °F. (Docket No. EERE-2015-BT-STD-0016, Public Meeting Presentation (September 30, 2015), No. 0007 at pp. 10-17) However, Rheem observed that this credit-based approach may not reflect annual average impact, because hot gas defrost performance is affected by outdoor temperature. (Docket No. EERE-2015-BT-STD-0016, Rheem, Public Meeting Transcript (September 30, 2015), No. 0067 at pp. 76 and 81) Hussmann added that many hot gas defrost systems incorporated in single-compressor dedicated condensing refrigeration systems do not work properly at ambient temperatures below 40 °F. (Docket No. EERE-2015-BT-STD-0016, Hussmann, Public Meeting Transcript (September 30, 2015), No. 0067 at p. 83) Rheem also pointed out that some unit coolers use both hot gas and electric defrost and that the test procedure's credit does not distinguish between hot gas defrost systems that provide pan heating using electric heaters from those systems that provide hot gas pan heating. The credit as applied assumes that there is no electric heating, but Rheem noted that in many applications the drain pan has electric defrost even if the rest of the system uses hot gas defrost. (Docket No. EERE-2015-BT-STD-0016, Rheem, Public Meeting Transcript (September 30, 2015), No. 0067 at pp. 90-91) DOE notes that the amended test procedure from the May 2014 test procedure rule did not define hot gas defrost or provide an indication of what percentage of defrost heat must be provided by hot gas defrost for a system to be eligible for the credit. See 79 FR 27388. Lennox further recommended that DOE's engineering

analysis should account for a 2-psi suction line pressure drop to account for the presence of the reversing valve that is used in many hot gas defrost systems to enable use of the feature. (Docket No. EERE-2015-BT-STD-0016, Lennox, Public Meeting Transcript (September 30, 2015), No. 0067 at p. 90)

DOE revised its analysis to address these Working Group comments. Specifically, DOE implemented changes to the engineering analysis, including accounting for the reversing valve pressure drop, effects on the EER of a multiplex condensing system associated with an increase in head pressure, and an adjustment of cost assumptions. DOE presented these analysis updates in the following public meeting. (Docket No. EERE-2015-BT-STD-0016, DOE, Public Meeting Presentation (October 15, 2015), No. 0026 at pp. 31-39; see also Docket No. EERE-2015-BT-STD-0016, various parties, Public Meeting Transcript (October 15, 2015), No. 0062 at pp. 215-226.)

As part of the negotiated terms, DOE agreed to remove the calculation method for determining the benefit of hot gas defrost from the test procedure. See Term Sheet at EERE-2015-BT-STD-0016, No. 56, recommendation #3. The regulatory text in this proposed rule reflects this change. With this change, manufacturers of refrigeration systems with hot gas defrost will be unable to test or rate the performance of the feature with the DOE test procedure. Therefore, in a separate rulemaking in which DOE is proposing standard levels for walk-in refrigeration systems, DOE is not evaluating hot gas defrost as an option for manufacturers to meet the proposed standards. Nevertheless, DOE continues to believe that hot gas defrost systems can reduce energy use and that their inclusion as part of an accepted test method to report their energy efficiency impact

would benefit the public by illustrating these systems' energy savings potential. DOE encourages interested parties to consider development of such test methods for potential future inclusion into DOE's test procedures.

DOE requests comments on its proposal to remove from the test procedure the credit-based method for calculating the efficiency benefit of hot gas defrost.

b. Adaptive Defrost

Consistent with the recommendations made during the Working Group negotiations, DOE is proposing to amend the test procedure so that the provisions for assigning a benefit to adaptive defrost cannot be used to certify compliance with the energy conservation standard. AHRI 1250-2009, the test procedure incorporated by reference, includes an optional test for a system with adaptive or demand defrost. That test specifies that the system shall be operated at dry coil conditions to establish the maximum time interval allowed between dry coil defrosts. The measured time between dry coil defrosts is averaged with the time between defrosts under the frosted coil conditions, and this average is used as the number of defrosts per day in subsequent energy calculations. (See appendix C, section C11.2 of AHRI 1250-2009.) DOE's May 2014 test procedure final rule further allowed that in lieu of conducting the optional test, the number of defrosts per day is set to the average of 1 and the number of defrosts per day is calculated under the frost load conditions. (10 CFR 431.304(c)(10)(x)) The May 2014 test procedure rule also specified that if defrost testing at frost load conditions is not

conducted, the energy use of defrost under frost load conditions shall be set to a percentage of the energy use of defrost under dry coil conditions, and the number of defrosts per day under the frost load conditions shall be set to 4. (10 CFR 431.304(c)(10)(ix)) Thus, if a manufacturer were to use the default values in the test procedure in lieu of testing a system with adaptive defrost, the total number of defrosts per day would be 2.5—the average of 1 and 4. Similar to hot gas defrost, the current test procedure does not require performance verification of adaptive defrost to obtain the credit.

Given the number of possible ways manufacturers could implement adaptive defrost, Working Group meeting participants suggested that DOE clearly define this term to specify which types of systems would be allowed to obtain the credit in the test procedure, and to avoid loopholes in which a manufacturer might claim the benefit for a given system with minimal cost impact but that would not have the associated savings realized in the field. As discussed in section III.A.1.g, several Working Group members and other attendees—AHRI, Emerson, Lennox, Hussmann, McHugh Energy, HTPG, and ASAP—provided input on a possible definition, but remained concerned that the definition would still not adequately define this feature in a way to ensure that all systems meeting the definition would produce an efficiency improvement consistent with the test procedure credit. (Docket No. EERE-2015-BT-STD-0016, various parties, Public Meeting Transcript for December 3, 2015 Meeting, No. 0057 at pp. 130-153) Ultimately, DOE suggested that certified ratings and standards should be based on equipment not having the feature, although the test procedure could still include a rating method to

allow manufacturers to make representations regarding improved performance for equipment having the feature. (Id.) The Term Sheet included a definition for adaptive defrost (see supra, section III.A.1.g), but also specified that manufacturers should be required to certify compliance to DOE for walk-in refrigeration basic models without adaptive defrost, and that compliance with the applicable walk-in refrigeration system standard should be assessed based on systems without adaptive defrost. The Term Sheet also recommended that manufacturers be permitted to make representations of the energy efficiency or consumption for a basic model using adaptive defrost, provided that the improved efficiency for this basic model is also certified to DOE. See Term Sheet at EERE-2015-BT-STD-0016, No. 0056, Recommendations #2 and #4.

c. On-Cycle Variable-Speed Evaporator Fan Control

As noted in section III.A.1.e, the majority of unit coolers that would be rated individually (i.e., as though they were paired with multiplex condensing systems) are, in fact, installed in dedicated condensing applications, and most dedicated condensing applications are single-capacity systems. On-cycle variable-speed evaporator fans as a design option would save energy only when they are part of a multi- or variable-capacity system. This option would improve the measured efficiency of a stand-alone unit cooler using the current test procedure, which is conducted for stand-alone unit coolers as if they were used in multiplex applications. However, the savings predicted for this design option by the test procedure would not be achieved in the majority of field installations, which use single-stage dedicated condensing units. Accordingly, manufacturers in the Working Group objected to including in the analysis design options that would not be

useful to the majority of end-users. (Docket No. EERE-2015-BT-STD-0016, No. 0006 at p. 1 and Docket No. EERE-2015-BT-STD-0016, various parties, Public Meeting Transcript for September 11, 2015 Meeting, No. 0061 at pp. 56-72)

The Working Group ultimately recommended that manufacturers be required to make representations, including certifications of compliance to DOE, of the energy efficiency or energy consumption of walk-in refrigeration systems without the inclusion of on-cycle variable-speed fans. See Term Sheet at EERE-2015-BT-STD-0016, No. 0056, Recommendation #4. Likewise, they recommended that compliance with the applicable walk-in refrigeration system standard should be assessed without using this feature. As part of this approach, manufacturers would be permitted to make representations of the energy efficiency or consumption for a unit cooler basic model using on-cycle variable-speed fans as measured in accordance with the DOE test procedure, provided that the additional represented value has been certified to DOE per 10 CFR 429.12. Id. However, the benefit from using these technologies would not be factored when determining compliance with the proposed standard. Id. DOE is proposing to adopt these changes to the test procedure.[6]

[6] DOE notes that it did not consider these technologies in its supporting analysis regarding the dedicated condensing (low-temperature) and multiplex condensing refrigeration system standards that it is planning to propose separately.

B. Actions to Facilitate Implementation of Energy Conservation Standards

1. Re-organization and Clarification of the Test Procedure for Walk-in Refrigeration Systems, Doors, and Panels

Other than the test procedure changes proposed in section III.A.2, DOE is also proposing to amend the regulatory text to clarify the test procedure for refrigeration systems, doors, and panels. The proposed changes focus on re-organizing the test procedure into three separate appendices, one for each of the metrics used to establish energy conservation standards for walk-in components. In addition, DOE proposes to clarify some of the definitions and terminology used in the test procedure.

Currently, Appendix A to Subpart R of Part 431 contains the procedure for measuring energy consumption (in kWh/day) for display and non-display doors. DOE proposes to revise Appendix A to remove definitions and references related to walk-in panels, as these are not relevant to this procedure. Specifically, DOE proposes to remove (1) the definitions of "core region" and "edge region" and (2) the subfloor temperature listed in Table A.1 of Appendix A. DOE proposes to amend the definition of "surface area" to remove the example referencing walk-in panels and amend the definition of "rating condition" to remove the discussion of internal walk-in components. These amendments are intended to clarify Appendix A and do not substantively change the DOE test procedure for measuring energy consumption of walk-in doors.

To address questions from the Working Group regarding how to calculate door power usage, DOE proposes to define "rated power," a term used in section 4.4.2(b) and 4.5.2(b) of Appendix A to Subpart R to Part 431. In the January 4, 2010 test procedure

NOPR for walk-ins, DOE explained that the term "rated power" must be read from each electricity consuming device's product data sheet or nameplate. 75 FR 186, 199. Consistent with this prior explanation, and to address scenarios where nameplate information is unavailable, DOE is proposing to define this term as referring to "the electricity consuming device's power as specified on the device's nameplate. If the device does not have a nameplate or such nameplate does not list the device's power, then the rated power must be read from the device's product data sheet."

For each basic model of walk-in door that has an electricity consuming device(s) for which rated power is taken from a product data sheet, the walk-in door manufacturer must retain the product data sheet as part of the test data underlying the walk-in door's certification report.

To further clarify the walk-in test procedure, DOE proposes to add a new Appendix B to Subpart R of Part 431. This appendix would include the currently prescribed method of measuring the R-value found in 10 CFR 431.304. Specifically, DOE proposes to move the provisions found at 10 CFR 431.304(b) and (c) into Appendix B. DOE also proposes to add the definition of "edge region" that was previously located in Appendix A to Subpart R of Part 431 to Appendix B, as this definition is relevant to the R-value test method.

Finally, DOE proposes to add a new Appendix C to Subpart R of Part 431 and include in this appendix the test method for refrigeration systems. Within Appendix C, DOE further organizes its discussion of test procedures in terms of the three refrigeration

system configuration types that it addresses: refrigeration systems distributed in commerce as matched pairs (including packaged dedicated systems); unit coolers distributed in commerce individually; and condensing units distributed in commerce individually. Within Appendix C, DOE is specifying that walk-in refrigeration systems be tested using AHRI 1250-2009, the test procedure incorporated by reference in 10 CFR 431.303, and adding modifications to the rule. One subsection contains the general modifications to the test conditions and tolerances within the industry test procedure that were promulgated in the May 2014 test procedure rule, a second contains general modifications to the method of test, while the remaining subsections address modifications that are specific to the system configuration types.

DOE is also proposing to correct a small number of typographical errors in the regulatory text. A table currently in 10 CFR 431.304(c)(10)(xv), replacing Table 16 in AHRI 1250-2009, has incorrect values for saturated suction temperature. The suction A and suction B temperatures should be -20 °F and -26 °F, respectively. Also, an equation currently in 10 CFR 431.304(c)(12)(ii) for defrost heat load contribution divides by 3.412 Btu/W-h, but should multiply by 3.412 Btu/W-h.

2. Representation Requirements

DOE is proposing to amend the representation requirements for refrigeration systems to clarify how to apply the test procedure to the range of possible kinds of refrigeration systems. Specifically, DOE is proposing to direct manufacturers of unit coolers, dedicated condensing units, package dedicated systems, and matched refrigeration systems to the appropriate subsections of Appendix C to Subpart R of Part

431—the DOE test procedure for refrigeration systems. DOE is also proposing to specify that it is not necessary to rate a matched refrigeration system if the constituent unit cooler(s) and dedicated condensing unit have been tested and rated separately. However, if a manufacturer wishes to represent the efficiency of the matched refrigeration system as distinct from the efficiency of either constituent component, or if the manufacturer cannot rate one or both of the constituent components using the specified method (e.g., if the system has a variable-capacity condensing unit, thereby preventing the manufacturer from being able to test the condensing unit individually), the manufacturer must test, represent, and certify the matched refrigeration system as specified in this section. A component that is part of a certified matched pair and that has not been rated individually cannot be sold individually, nor can it be sold as part of a different matched pair (that is, with a different component matched to it) unless that new matched pair has also been tested and certified.

DOE requests comment on the revised representation requirements.

See section V.E for a list of issues on which DOE seeks comment.

3. Certification and Compliance Requirements

A manufacturer of a walk-in cooler or walk-in freezer is any person who: (1) manufactures a component of a walk-in cooler or walk-in freezer that affects energy consumption, including, but not limited to, refrigeration, doors, lights, windows, or walls; or (2) manufactures or assembles the complete walk-in cooler or walk-in freezer. 10 CFR 431.302.

Several of the statutory standards, as well as DOE's 2014 standards and any energy conservation standards that DOE may adopt in its separate ongoing rulemaking (see Docket No. EERE-2015-BT-STD-0016) apply to specific components of a walk-in. A manufacturer of a walk-in component (i.e., part 1 of the definition of a manufacturer of a walk-in cooler or walk-in freezer) is the entity that manufactures, produces, assembles or imports a walk-in panel, door or refrigeration system. A manufacturer of a walk-in component is responsible for ensuring the compliance of the component(s) it manufactures. DOE requires a manufacturer of a walk-in component to certify the compliance of the components it manufactures.

A manufacturer of a complete walk-in (i.e., part 2 of the definition of a manufacturer of a walk-in cooler or walk-in freezer) is the entity that manufactures, produces, assembles or imports a walk-in cooler or freezer (i.e., an enclosed storage space meeting the definition of a walk-in cooler or freezer). In some cases, this may be an "installer." Although DOE does not require a manufacturer of a complete walk-in to certify the compliance of the "box" as a whole, a manufacturer of a complete walk-in must ensure that the walk-in meets applicable statutory and/or regulatory standards. If a manufacturer of a complete walk-in also meets part 1 of the definition (i.e., also manufactures individual components), then it must certify the compliance of the components it manufactures. Compliance responsibilities for manufacturers of complete walk-ins are discussed in more detail later in this section.

a. Manufacturers of Walk-in Components

A manufacturers of a walk-in component must ensure that the component(s) meet applicable standard(s). DOE is proposing to maintain its current component-based approach for compliance certification. Manufacturers of walk-in components must currently submit a certification report to the Department as described in 10 CFR 429.12 and 10 CFR 429.53(b) to certify compliance with the standards for which compliance is currently required. Namely:

- Manufacturers of doors for walk-in coolers or walk-in freezers must report the door type, R-value of the door insulation, and a declaration that the manufacturer has incorporated the applicable design requirements. In addition, manufacturers of transparent reach-in doors and windows for walk-ins must report the glass type of the doors and windows (such as double-pane with heat reflective treatment or triple-pane glass with gas fill), as well as the power draw of the antisweat heater in watts per square foot of door opening.

- Manufacturers of walk-in cooler or walk-in freezer panels must report the R-value of the insulation.

- Manufacturers of refrigeration systems for walk-ins must report each motor's purpose (that is, whether the motor is an evaporator fan motor or a condenser fan motor), the motor's horsepower, and a declaration that the manufacturer has incorporated the applicable design requirements.

DOE generally plans to retain these existing requirements. However, DOE proposes to amend the provisions at 10 CFR 429.12(b)(6) that require walk-in manufacturers to submit the basic model number for each walk-in brand. Instead, DOE proposes that for each brand, a walk-in manufacturer must submit both the basic model number and the manufacturer's individual model number(s). DOE elected to limit walk-in manufacturer's reporting requirements in a March 2011 rulemaking revising DOE's certification, compliance, and enforcement regulations for certain consumer products and commercial and industrial equipment including walk-ins. At the time, DOE stated it did not have sufficient information to determine whether reporting of individual model numbers for walk-in components was feasible, but that it would revisit this issue in a future rulemaking. 76 FR 12422, 12446 (March 7, 2011). Since the March 2011 rulemaking, manufacturers have routinely submitted both basic model numbers and individual model numbers for walk-in refrigeration systems, panels, and doors. The collected information suggests that it is feasible for manufacturers to certify both basic model numbers and individual model numbers for each brand.[7] Accordingly, this proposal would require that a walk-in manufacturer provide individual model number(s) as part of its reporting submission.

In this NOPR, DOE also proposes to add reporting requirements for both the standards promulgated in the June 2014 final rule (with a June 2017 compliance date) and for the forthcoming proposed standards for certain equipment classes of walk-in

[7] Public certification information for walk-in refrigeration systems, panels, and doors can be found at https://www.regulations.doe.gov/certification-data/.

refrigeration systems that will be defined in a separate energy conservation standards rulemaking (see Docket No. EERE-2015-BT-STD-0016).

In addition to the reporting requirements defined in 10 CFR 429.53(b), DOE proposes to require certification reports to include the following public product-specific information to show compliance with the amended energy conservation standards:

- Doors: rated energy consumption, and rated surface area in square feet.

- Refrigeration systems: rated annual walk-in energy factor (AWEF), rated net capacity, and the configuration tested for certification (e.g., condensing unit only, unit cooler only, or matched pair).

To enable DOE to verify a door's represented energy consumption, DOE proposes to require door manufacturers to certify additional product specific information that would not be published on the DOE web site. Specifically, DOE proposes to require door manufacturers to certify the rated power of each light, heater wire, and other electricity consuming device associated with each model of display and non-display door and whether the device(s) has a timer, control system, or other demand-based control reducing the device's power consumption.

If adopted, these reporting requirements would need to be used by walk-in component manufacturers when certifying compliance with the amended energy conservation standards for doors refrigeration systems.

b. Manufacturers of Complete Walk-ins

Although DOE does not require manufacturers of complete walk-ins to submit certification reports, a manufacturer of a complete walk-in must ensure that each walk-in it manufactures meets the various statutory and regulatory standards. That is, a manufacturer of a complete walk-in is required to use components that comply with the applicable standards and to ensure the final product fulfills the statutory design requirements.

For example, consider an installer deciding which panels to use. The installer could assemble a compliant walk-in in several ways. The installer could build a panel, test it, and certify it as the component manufacturer. The installer could use an uncertified panel with a claimed compliant R-value and accept responsibility for its compliance. The installer could use a certified panel with a label and bear no responsibility for the compliance of the panel. In any of these situations, the installer must use compliant panels. The only difference between the 3 scenarios is that in the third scenario the installer is permitted to rely upon the representations of the manufacturer of a WICF component to ensure compliance; if those representations turn out to be false, the component manufacturer is responsible.

As discussed in more detail in III.B.5, DOE is proposing several provisions to help manufacturers of complete walk-ins, who are not manufacturers of walk-in components, ensure compliance with the standards. In addition to the component requirements for which DOE requires certification (doors, panels, and refrigeration systems), walk-ins generally must: have automatic door closers; have strip doors, spring

hinged doors, or other method of minimizing infiltration when doors are open; and for all interior lights, use light sources with an efficacy of 40 lumens per watt or more. It is the responsibility of the manufacturer of the complete walk-in to ensure that the walk-in incorporates these design features.

DOE seeks comment on the proposed additions to the reporting requirements. See section V.E for a list of issues on which DOE seeks comment.

4. Enforcement Provisions

a. Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products

DOE is proposing to include walk-ins to the list of equipment subject to the enforcement testing sampling plan for covered equipment found in Appendix B of Subpart C of Part 429.

b. Equipment-specific Enforcement Provisions

DOE proposes to add specific enforcement provisions for walk-in refrigeration systems to 10 CFR 429.134. Specifically, DOE proposes to clarify which entity or entities are liable for the distribution of noncompliant units in commerce, as well as to explain how the Department verifies refrigeration capacity for walk-in refrigeration systems.

If DOE determines that a basic model of a panel, door, or refrigeration system for walk-ins fails to meet an applicable energy conservation standard, then the manufacturer

of that basic model is responsible for the consequences flowing from that noncompliance. If DOE determines that a complete walk-in cooler or walk-in freezer or any component thereof fails to meet an applicable energy conservation standard, then the manufacturer of that complete walk-in cooler or walk-in freezer is responsible for the noncompliance with the applicable standard. However, a manufacturer of a complete walk-in would not be held responsible for the use of components that were certified and labeled as compliant but later found to be noncompliant with the applicable standards.

DOE also proposes to add an explanation of how the Department verifies refrigeration capacity for walk-in refrigeration systems to 10 CFR 429.134. The refrigeration capacity of the basic model will be measured pursuant to the test requirements of 10 CFR part 431 for each unit tested. The results of the measurement(s) will be averaged and compared to the value of refrigeration capacity certified by the manufacturer. The certified refrigeration capacity will be considered valid only if the average measured refrigeration capacity is within 5 percent of the certified refrigeration capacity. If the certified refrigeration capacity is found to be valid, that refrigeration capacity will be used as the basis for calculating annual energy consumption for the basic model. If the certified refrigeration capacity is found to be invalid, the average measured refrigeration capacity will serve as the basis for calculating annual energy consumption for the basic model.

Further, DOE proposes to specify how DOE will verify the surface area for walk-in display doors and non-display doors in 10 CFR 429.134. The certified surface area will be considered valid only if the average measured surface area of the door is within 1

percent of the certified surface area. If the certified surface area is found to be valid, that surface area will be used as the basis for calculating maximum energy consumption for the basic model. If the certified surface area is found to be invalid, the average measured surface area will serve as the basis for calculating maximum energy consumption for the basic model.

In addition, DOE proposes to specify in 10 CFR 429.134 how DOE will account for the rated power (as defined in this proposal) of each electricity consuming device(s) in calculating the walk-in door energy consumption. For each basic model of walk-in cooler and freezer door, DOE will calculate the door's energy consumption using the power listed on the nameplate of each electricity consuming device shipped with the door. If an electricity consuming device shipped with a walk-in door does not have a nameplate or such nameplate does not list the device's power, then DOE will use the device's "rated power" included in the door's certification report.

DOE seeks comment on the proposed method for verifying the capacity of walk-in refrigeration systems and the surface area of walk-in doors.

See section V.E for a list of issues on which DOE seeks comment.

5. Labeling Requirements

If the Secretary has prescribed test procedures for any class of covered equipment, a labeling rule applicable to such class of covered equipment must be prescribed. See 42 U.S.C. 6315(a). EPCA, however, also sets out certain criteria that must be met prior to

prescribing a given labeling rule. Specifically, to establish these requirements, DOE must determine that: (1) labeling in accordance with Section 6315 is technologically and economically feasible with respect to any particular equipment class; (2) significant energy savings will likely result from such labeling; and (3) labeling in accordance with Section 6315 is likely to assist consumers in making purchasing decisions. (42 U.S.C. 6315(h))

If these criteria are met, EPCA specifies certain aspects of equipment labeling that DOE must consider in any rulemaking establishing labeling requirements for covered equipment. At a minimum, such labels must include the energy efficiency of the affected equipment, as tested under the prescribed DOE test procedure. The labeling provisions may also consider the addition of other requirements, including: directions for the display of the label; a requirement to display on the label additional information related to energy efficiency or energy consumption, which may include instructions for maintenance and repair of the covered equipment, as necessary, to provide adequate information to purchasers; and requirements that printed matter displayed or distributed with the equipment at the point of sale also include the information required to be placed on the label. (42 U.S.C. 6315(b) and 42 U.S.C. 6315(c))

DOE proposes to establish labeling requirements for walk-in cooler and freezers. Specifically, DOE proposes to require certain information, and the display of this required information, for door, panel, and refrigeration system nameplates. DOE also proposes to clarify requirements with respect to the disclosure of efficiency information

in marketing materials and the labeling requirements for process cooling refrigeration systems.

DOE proposes that the permanent nameplates of doors for walk-in coolers and walk-in freezers must be clearly marked with the rated energy consumption, the door brand, the door model number, the date of manufacture of the door, and the statement, “This door is designed and certified for use in walk-in cooler and freezer applications.” Specifically, the energy consumption must be identified in the form "EC ___," and the model number must be displayed in one of the following forms: "Model ___", "Model number ___", or "Model No. ___".

DOE proposes that the permanent nameplates of panels for walk-in cooler and walk-in freezers must be clearly marked with the rated R-value, the panel model number, the date of manufacture of the panel, and the statement, “This panel is designed and certified for use in walk-in cooler and freezer applications.” The R-value must be identified in the form "R-value ___," and the model number must be displayed in one of the following forms: "Model ___", "Model number ___", or "Model No. ___".

DOE proposes that the permanent nameplates of refrigeration systems for walk-in coolers and walk-in freezers (that are not manufactured solely for process cooling applications) must be clearly marked with the AWEF, refrigeration system brand, refrigeration system model number, the date of manufacture of the refrigeration system, and the statement, “This refrigeration system is designed and certified for use in walk-in cooler and freezer applications.” The AWEF must be identified in the form "AWEF ___",

and the model number must be displayed in one of the following forms: "Model ___" , "Model number ___", or "Model No. ___". In addition, DOE proposes that the permanent nameplate of a refrigeration system component that can only be used as part of a process cooling refrigeration system must be marked clearly with the refrigeration system brand, refrigeration system model number, the date of manufacture of the refrigeration system, and the statement, “This refrigeration system is designed only for use in walk-in cooler and freezer process cooling refrigeration applications.” The model number must be displayed in one of the following forms: "Model ___" , "Model number ___", or "Model No. ___". If a refrigeration system can be used for both process cooling refrigeration and other types of refrigeration for walk-in cooler and freezer applications, then it must be clearly marked with the AWEF, refrigeration system brand, refrigeration system model number, the date of manufacture of the refrigeration system, and the statement, “This refrigeration system is designed and certified for use in walk-in cooler and freezer applications.”

For walk-in panels, doors, and refrigeration systems, DOE proposes that all orientation, spacing, type sizes, typefaces, and line widths to display this required information must be the same as or similar to the display of the other performance data contained on the component’s permanent nameplate. DOE is also considering a requirement specifying the location of the permanent nameplates on doors, panels, and refrigeration systems. Specifically, that the permanent nameplate must be visible at all times, including when the component is assembled into a complete walk-in.

DOE proposes to clarify the requirements for the disclosure of efficiency information in marketing materials and to require that such marketing materials must prominently display the same information that must appear on a walk-in cooler or walk-in freezer component's permanent nameplate.

DOE has reviewed the proposed labeling requirements with respect to the three requirements in EPCA restricting the Secretary's authority to promulgate labeling rules and has made the following findings. (42 U.S.C. 6315(h))

First, the proposed labeling recommendations are technologically and economically feasible with respect to each equipment class in this rulemaking. In general, DOE has found that walk-in refrigeration system manufacturers and display door manufacturers include nameplates on their equipment, and typically these nameplates include the equipment’s model number. DOE believes it is technologically feasible for refrigeration system and display door manufacturers to include energy efficiency or energy consumption information on the label without increasing the size of the label. DOE expects that the cost to do so would be negligible. Accordingly, in DOE’s view, requiring that labels provide this information would be economically feasible as well.

DOE has found, however, that it is less common for non-display doors and panels for walk-ins to have nameplates. DOE understands that, while an entire assembled walk-in cooler or freezer may have a nameplate, each individual panel and non-display door making up a walk-in cooler or freezer may not be labeled. Nonetheless, DOE expects that adding a permanent nameplate or permanent sticker to both walk-in non-display doors

and panels is technologically feasible, as both types of equipment have adequate useable surface to apply such labels. DOE estimated that the total cost of applying labels to non-display doors and panels would be negligible – less than a tenth of one percent of the average manufacturer's annual revenue – and the labeling requirements are thus economically feasible.

DOE also considered the cost to manufacturers of updating their marketing materials to include efficiency information. Marketing materials include literature, data sheets, selection software, sales training, and compliance documentation. Based on marketing conversion costs for other commercial equipment, DOE estimates that manufacturers may incur costs of up to $10,000 per model to update marketing materials for walk-in components. Panel and door manufacturers typically only produce a few distinct models of their walk-in equipment, and DOE estimated that marketing-related conversion costs for these components would total less than one percent of industry annual revenue attributed to sales of walk-in equipment. Refrigeration manufacturers often produce a large number of distinct basic models—several have certified up to 100 basic models of refrigeration systems on DOE's Compliance Certification Management System ("CCMS") website. DOE estimates that marketing-related conversion costs for walk-in refrigeration systems could total approximately one percent of industry annual revenue attributed to sales of walk-in equipment. However, many companies that manufacture walk-in refrigeration systems also make several other types of products, with walk-in equipment comprising a small portion of their overall revenues. Given these

estimates, DOE tentatively concludes that updating marketing materials is economically feasible for manufacturers of walk-in equipment.

DOE also examined the impact of these new requirements on small manufacturers. For further discussion, see section IV.B.2.

Second, DOE believes the proposed labeling requirements would likely result in significant energy savings. The related energy conservation standards are expected to save approximately 3 quadrillion British thermal units (quads). Requiring labels that include the rated value subject to the standards will increase consumer awareness of the standards. As a result, requiring the labels may increase consumer demand for more efficient walk-in components, thus leading to additional savings beyond that calculated for the standards. In addition, labeling requirements would help installers, assemblers, and contractors ensure that they are selecting equipment that the component manufacturer intended to be used as part of a completed walk-in, and would limit the potential compliance burden faced by these entities. For example, insulated metal panels may be used in other types of applications, such as communications equipment sheds. Labeling requirements differentiate walk-in cooler and freezer panels from other types of insulated metal panels that are not appropriate for use in walk-ins.

Third, DOE finds that the proposed labeling requirements are likely to assist consumers in making purchasing decisions. By including the rated metric on the nameplate and marketing materials, manufacturers will be able to demonstrate to purchasers that the equipment they are purchasing meets the DOE standard and is

acceptable for use in a walk-in. Additionally, consumers will have the information needed to compare the energy efficiency performance between different component models, with the assurance that the ratings were calculated according to a DOE-specified test procedure.

DOE seeks comment on the proposed requirements for manufacturers to label their walk-in equipment and update their marketing materials for walk-in equipment to include efficiency information. DOE also seeks comment on whether it should add a requirement specifying that the permanent nameplates on doors, panels, and refrigeration systems be visible at all times, including when the component is assembled into a complete walk-in. Further, DOE asks whether these requirements are technologically and economically feasible. DOE particularly seeks data from manufacturers regarding the cost of labeling and updating marketing materials.

See section V.E for a list of issues on which DOE seeks comment.

C. Compliance with Other EPCA Requirements

In addition to the issues discussed in this preamble, DOE examined its other obligations under EPCA in developing the amendments in this proposal. These requirements are addressed in greater detail below.

1. Test Burden

EPCA requires that the test procedures DOE prescribes or amends be reasonably designed to produce test results that measure the energy efficiency, energy use, or

estimated annual operating cost of a covered product during a representative average use cycle or period of use. These procedures must also not be unduly burdensome to conduct. See 42 U.S.C. 6293(b)(3) and 42 U.S.C. 6316(a). DOE has concluded that the proposed amendments satisfy this requirement. The proposed test procedure amendments represent minor changes to the test procedure that do not affect the equipment required for testing and either reduce or have no effect on the time required to conduct the testing. These amendments include the removal of the rating method for refrigeration systems with hot gas defrost, the requirement that certified ratings of refrigeration systems with adaptive defrost shall not include the benefit of the adaptive defrost feature, and the requirement that certified ratings of unit coolers with on-cycle variable-speed fan controls shall not include the benefit of this feature.

Section III.A.2.a discusses the reasons for removing the method for measuring the benefit of hot gas defrost from the test procedure. Currently, the test procedure for this feature consists of a calculation to represent the efficiency improvement of hot gas defrost as a credit applied to any low-temperature refrigeration system that includes it. No testing is required to validate the performance of the feature and thus there is no test burden involved. Likewise, there is no change in test burden associated with removing this calculation method.

Section III.A.2.b discusses DOE's revisions to the test procedure for refrigeration systems with adaptive defrost. Currently, manufacturers may certify the potential energy efficiency benefit of including adaptive defrost by either testing the feature or by using a calculation to represent the efficiency improvement of systems with this feature without

testing. DOE is proposing to modify the test procedure to specify that certified ratings of systems with this feature shall exclude the benefit of the adaptive defrost feature. Because manufacturers currently have the option to use the calculation method to rate systems with this feature, there is no test burden involved because no validation testing is required; removing the ability to certify this feature would not have any effect on the associated test burden.

Section III.A.2.c discusses DOE's revisions to the test procedure for unit coolers with on-cycle variable-speed fan control. DOE currently allows manufacturers to test the benefit of this feature using the DOE test procedure for unit coolers. DOE is proposing to modify the test procedure to specify that certified ratings of systems with this feature shall exclude the benefit. This approach lowers the testing burden for unit coolers with this feature, because manufacturers would no longer perform this test to obtain ratings for certification. (Manufacturers may still make representations of unit cooler efficiency with this feature; in this case, the testing burden would not change.)

2. Changes in Measured Energy Use

When DOE modifies test procedures, it must determine to what extent, if any, the new test procedure would alter the measured energy use of covered products. (42 U.S.C 6293(e)(1)). DOE has tentatively determined that the proposed test procedure amendments could affect the measured energy use of certain covered products, but the amendments would only affect aspects related to testing after the compliance date of the amended energy conservation standards that DOE is proposing in a separate notice. The test procedure amendments would not affect the current standards for any walk-in

components, nor would they affect the standards promulgated in the June 2014 final rule with a compliance date of June 5, 2017. The standards with a compliance date in 2017 apply to medium-temperature, dedicated condensing refrigeration systems, while the test procedure modifications would only affect low-temperature systems and unit coolers. In the rulemaking analysis for the standards that DOE is proposing separately, DOE is accounting for the test procedure changes being proposed in this notice. Therefore, the modifications to the test procedure that DOE is proposing herein will require no further changes to the energy conservation standards.

DOE requests comment on its determination that this proposal would not introduce any changes that increase test burden or alter the measured energy use of walk-in equipment.

See section V.E for a list of issues on which DOE seeks comment.

3. Cost and Burden Impact on WICF Manufacturers

As explained in section III.B.3, a manufacturer of a walk-in cooler or walk-in freezer is any person who: (1) manufactures a component of a walk-in cooler or walk-in freezer that affects energy consumption, including, but not limited to, refrigeration, doors, lights, windows, or walls; or (2) manufactures or assembles the complete walk-in cooler or walk-in freezer. 10 CFR 431.302. DOE has proposed to add clarifications that the entity responsible for testing, rating, and certifying is the WICF component manufacturer. Thus, WICF manufacturers that exclusively assemble the complete WICF do not bear the testing and certification burden. DOE is also proposing labeling and revisions to the

certification requirements on WICF component manufacturers in this proposed rule. The addition of these proposals, if adopted, will reduce any burden on WICF manufacturers that manufacture or assemble the complete walk-in cooler or walk-in freezer by allowing them to more easily identify compliant WICF components for assembly. This is the compliance regime in place today, which is unchanged by this proposal; however, DOE believes labeling will help WICF assemblers comply with the regulations. In conclusion, DOE does not believe that there is any burden added on WICF manufacturers that assemble complete WICFs as a result of performance-based testing requirements. While DOE did not assess the impact on these manufacturers in the final rules pertaining to walk-in cooler and walk-in freezer test procedures published in April 2011 and May 2014, DOE expects this assessment holds true for those final rules as well. 76 FR 21605 and 79 FR 27412.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget ("OMB") has determined that test procedure rulemakings do not constitute "significant regulatory actions" under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (October 4, 1993). Accordingly, this action was not subject to review under the Executive Order

by the Office of Information and Regulatory Affairs ("OIRA") in the Office of Management and Budget.

B. Review Under the Regulatory Flexibility Act

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

For manufacturers of walk-in equipment, the Small Business Administration ("SBA") has set a size threshold, which defines those entities classified as "small businesses" for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. 65 FR 30848 (May 15, 2000), as amended at 65 FR 53533, 53544 (September 5, 2000) and codified at 13 CFR part 121. The size standards are listed by North American Industry Classification System ("NAICS") code and industry description and are available at http://www.sba.gov/category/navigation-structure/contracting/contracting-

officials/small-business-size-standards. walk-in equipment is classified under NAICS 333415, "Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing." The SBA sets a threshold of 1,250 employees or less for an entity to be considered as a small business for this category. Based on this threshold, DOE presents the following IRFA analysis:

1. Description and Estimated Number of Small Businesses Regulated

DOE used available public information to identify potential small manufacturers. DOE's research involved industry trade association membership directories (including AHRI Directory[8], and NAFEM[9]), public databases (e.g. the SBA Database[10]), individual company websites, and market research tools (e.g., Dun and Bradstreet reports[11] and Hoovers reports[12]) to create a list of companies that manufacture or sell equipment covered by this rulemaking. During the 2014 rulemaking, DOE also asked stakeholders and industry representatives if they were aware of any other small manufacturers during manufacturer interviews and at DOE public meetings. DOE reviewed publicly available data and contacted select companies on its list, as necessary, to determine whether they met the SBA's definition of a small business manufacturer of covered walk-in coolers and walk-in freezers. DOE screened out companies that do not offer equipment covered by this rulemaking, do not meet the definition of a "small business," or are foreign-owned.

[8] See www.ahridirectory.org/ahriDirectory/pages/home.aspx.
[9] See http://www.nafem.org/find-members/MemberDirectory.aspx
[10] See http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm.
[11] See www.dnb.com/.
[12] See www.hoovers.com/.

DOE identified forty-seven panel manufacturers and found forty-two of the identified panel manufacturers to be small businesses.

DOE identified forty-nine walk-in door manufacturers. Forty-five of those produce solid doors and four produce display doors. Of the forty-five solid door manufacturers, forty-two produce panels as their primary business and are considered in the category of panel manufacturers in this preamble. The remaining three solid door manufacturers are all considered to be small businesses. Of the four display door manufacturers, two are considered small businesses. Therefore, of the seven manufacturers that exclusively produce walk-in doors (three producing solid doors and four producing display doors), DOE determined that five are small businesses.

DOE identified nine walk-in refrigeration system manufacturers that produce equipment for one or more of the equipment classes analyzed in this proposal. All nine are domestic companies. Two of the nine manufacturers are small businesses.

Lastly, DOE looked at manufacturers that assemble the complete walk-in cooler or walk-in freezer (i.e., an installer). Walk-in installation work is a subset of the highly fragmented heating, ventilation, air-conditioning, and refrigeration (HVACR) industry. DOE was unable to identify any company that exclusively operated as an assembler of WICFs. In general, WICF assemblers offer walk-in installation as part of a broader refrigeration offering and/or broader heating and cooling offering.

DOE estimates that 10,000 to 30,000 companies offer walk-in contractor services. This is a subset of the roughly 100,000 companies that make up the domestic HVACR contractor industry. Key activities for these companies include the installation of residential HVAC, commercial HVAC, commercial refrigeration, and industrial refrigeration systems. Of these, DOE estimates the majority are small.

2. Description and Estimate of Compliance Requirements

Panel manufacturers have had to comply with standards for their panels' R-value (a measure of the insulating value) since 2009. In a previous test procedure rule, published in May 2014, DOE established a sampling plan and certification reporting requirements for walk-in panels. 79 FR 27388 (May 13, 2014). DOE is not proposing any new testing, certification, compliance, or reporting requirements in this NOPR. However, DOE is proposing labeling requirements for walk-in panels, and is also proposing that manufacturers must include rating information on marketing materials for panels. For further discussion of the proposed labeling requirements, see section III.B.5. As discussed in that section, the cost of updating marketing materials could be up to $10,000 per panel model, but manufacturers—including small manufacturers—tend to produce only a few distinct panel models. DOE calculated that the cost of updating marketing materials for a small manufacturer would be less than one percent of annual revenues; thus, this requirement would not have a significant impact on small manufacturers.

DOE is proposing new certification requirements for door manufacturers and refrigeration system manufacturers to certify their basic models to DOE. Door manufacturers must certify that they meet the June 2014 standards, which have a compliance date of June 5, 2017. Manufacturers of refrigeration systems for which standards were promulgated in the June 2014 final rule, and which were not subsequently remanded by the United States Court of Appeals for the Fifth Circuit's court order, must also certify that those refrigeration systems meet the June 2014 standards, which have a compliance date of June 5, 2017. DOE is conducting a separate energy conservation standards rulemaking for those refrigeration system classes whose standards were remanded. On the compliance date for those standards, manufacturers will have to certify that those refrigeration systems meet the relevant standards using the certification requirements being proposed in this rule.

In general, DOE is proposing to modify the data elements walk-in door manufacturers and walk-in refrigeration system manufacturers submit as part of a certification report indicating that all basic models distributed in commerce in the U.S. comply with the applicable standards using DOE's testing procedures, in include product-specific certification data describing the efficiency and characteristics of the basic model. The certification reports are submitted for each basic model, either when the requirements go into effect (for models already in distribution), or when the manufacturer begins distribution of a particular basic model, and annually thereafter. Reports must be updated when a new model is introduced or a change affecting energy efficiency or use is made to an existing model resulting in a change in the certified rating. (10 CFR 429.12(a))

DOE currently requires manufacturers or their party representatives to prepare and submit certification reports using DOE's electronic Web-based tool, the Compliance Certification Management System ("CCMS"), which is the only mechanism for submitting certification reports to DOE. CCMS currently has product-specific templates that manufacturers must use when submitting certification data to DOE. See http://www.regulations.doe.gov/ccms. This proposed rule would not change the requirement that manufacturers submit certification reports electronically. DOE believes the availability of electronic filing through the CCMS system reduces reporting burdens, streamlines the process, and provides the Department with needed information in a standardized, more accessible form. This electronic filing system also ensures that records are recorded in a permanent, systematic way.

DOE is also proposing to require manufacturers to label their doors and refrigeration systems with product-specific data and information describing the efficiency and characteristics of the basic model, and is also proposing that manufacturers must include rating information on marketing materials for these components. For further discussion of the proposed labeling requirements, see section III.B.5. As discussed in that section, the cost of updating marketing materials could be up to $10,000 per basic model. Door manufacturers—including small manufacturers—tend to produce only a few distinct door models; thus, this requirement would not have a significant impact on small door manufacturers. Small refrigeration manufacturers, on the other hand, may produce up to 100 basic models of refrigeration systems—as many as large manufacturers. The cost of updating marketing materials is a one-time expense that varies greatly by product offering.

DOE is proposing to add clarifications that the entity responsible for testing, rating, and certifying is the WICF component manufacturer. Thus, WICF manufacturers that exclusively assemble the complete WICF do not bear the testing and certification burden. DOE is also proposing labeling and revisions to the certification requirements on WICF component manufacturers in this proposed rule. The addition of these proposals, if adopted, will reduce any burden on WICF manufacturers that manufacture or assemble the complete walk-in cooler or walk-in freezer by allowing them to more easily identify compliant WICF components for assembly. This does not change the compliance requirements for these WICF manufacturers and installers; however, DOE believes labeling will help WICF assemblers comply with the regulations. In conclusion, DOE does not believe that small WICF manufacturers that assemble complete WICFs will see an increased burden from the proposals in this rulemaking.

3. Duplication, Overlap, and Conflict with Other Rules and Regulations

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

4. Significant Alternatives to the Rule

This section considers alternatives to the proposals in this document. DOE has tried to minimize the reporting burden as much as possible by: (1) Accepting electronic submissions; (2) providing preformatted templates that lay out the certification and compliance requirements for each product; and (3) allowing manufacturers to group individual models into basic models for the purposes of certification to reduce the number of discrete models reported to the Department. DOE has also made efforts to

address the concerns of small businesses by expanding the ability of manufacturers to use alternative efficiency determination methods ("AEDMs") in lieu of testing equipment.

DOE seeks input on its Initial Regulatory Flexibility Analysis from businesses that would be affected by this rulemaking and will consider comments received in the development of any final rule.

See section V.E for a list of issues on which DOE seeks comment.

C. Review Under the Paperwork Reduction Act of 1995

Under the Paperwork Reduction Act of 1995 ("PRA") (44 U.S.C. 3501, et seq.), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. DOE established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including walk-in coolers and walk-in freezers. See generally 10 CFR part 429. This requirement has been approved by OMB for walk-ins under OMB control number 1910-1400. This proposal would expand the information that manufacturers and importers of covered walk-in equipment would need to submit to the Department as part of a certification that the products they are distributing in commerce in the U.S. comply with the applicable energy conservation standards. Further, this proposal requires manufacturers to disclose performance information as part of the proposed labeling requirements for walk-in panels, doors, and refrigeration systems.

In compliance with the PRA, DOE is seeking comment on this proposed expansion of the existing information collection.

Agency: U.S. Department of Energy (DOE).

OMB Control Number: OMB No. 1910-1400.

Information Collection Request Title: Certification Reports, Compliance Statements, Application for a Test Procedure Waiver, Recordkeeping for Consumer Products and Commercial/Industrial Equipment subject to Energy or Water Conservation Standards, and Label and Marketing Material Information Disclosure.

Type of Request: Revision and Expansion of an Existing Collection.

Requested Expiration Date of Approval: Three years from the date of approval.

Purpose: Manufacturers of the covered products addressed in this NOPR are already required to certify to DOE that their equipment complies with applicable energy conservation standards. In certifying compliance, manufacturers must test their equipment according to the applicable DOE test procedures for the given equipment type, including any amendments adopted for those test procedures, or use AEDMs (as applicable) to develop the certified ratings of the basic models. The collection-of-information requirement for the certification proposals is subject to review and approval by OMB under the PRA.

Manufacturers are required to certify: (1) New basic models before distribution in commerce; (2) existing basic models, whose certified ratings remain valid, annually; (3) existing basic models, whose designs have been altered resulting in a change in rating that is more consumptive or less efficient, at the time the design change is made; and (4) previously certified basic models that have been discontinued annually. Respondents may submit reports to the Department at any time during the year using DOE's online system.

Amendments to the existing walk-in standards are expected to result in slight changes to the information that DOE is proposing to collect for walk-ins. Specifically, DOE is proposing that, in addition to information currently required for certification reports, door manufacturers report the door energy use as determined by the DOE test procedure, the rated power of each light, heater wire and/or other electricity consuming device and whether such device(s) has a control system. Refrigeration system manufacturers report the Annual Walk-in Efficiency Factor ("AWEF"), net capacity as determined by the DOE test procedure, and the configuration test for certification. Manufacturers will have to re-submit certification reports for basic models that they distribute in commerce starting on the compliance date of the amended standards.

In addition, DOE proposed to add labeling requirements for walk-in panels, doors, and refrigeration systems. Specifically, each of these components will be required to disclose on its permanent nameplate the rated energy use or efficiency, as applicable, brand, model number, and date of manufacture. In addition, each component label must include a statement indicating that the component is designed and certified for use in

walk-in cooler and freezer applications. See section III.B.5 for the specific labeling requirements for each component.

DOE estimated that it will take each respondent (walk-in component manufacturer) approximately 1 hour total per company per year to comply with the information disclosure (i.e., labeling) requirements based on 0.25 hours of technician/technical work to apply the label and 0.75 hours clerical work to create the label and update marketing materials. For the purposes of estimating burden, DOE determined from its Compliance Certification Database that each panel manufacturer and door manufacturer certifies on average 4 basic models and that each basic model will require a discrete label. Based on DOE's Compliance Certification Database, each refrigeration manufacturer certifies approximately 100 basic models and DOE is conservatively estimating that each basic model will require a unique label.

Regarding the additional certification requirements, DOE estimates that the slight change in certification requirements would not result in additional burden because walk-in component manufacturers are already required to annually certify compliance with the existing standards.

DOE estimates the burden for this rule as follows:

(1) Annual Estimated Number of Respondents: 63 (47 panel manufacturers, 7 door manufacturers, and 9 refrigeration system manufacturers);

(2) Annual Estimated Number of Total Responses: 1,116 (188 for panels, 28 door, 900 for refrigeration systems)

(3) Annual Estimated Number of Burden Hours: 1,116 (1 hour for applying and creating label and updating marketing materials);

(4) Annual Estimated Reporting and Recordkeeping Cost Burden: $ 83,700

DOE requests comment generally on its review under the PRA, and specifically on: (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the agency, including whether the information shall have practical utility; (b) the accuracy of the agency's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used; (c) ways to enhance the quality, utility, and clarity of the information to be collected; and (d) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques or other forms of information technology.

See section V.E for a list of issues on which DOE seeks comment.

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

In this proposed rule, DOE proposes test procedure amendments that will likely be used to develop and implement future energy conservation standards for walk-in coolers and walk-in freezers. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this proposed rule would amend the existing test procedures without affecting the amount, quality or distribution of energy usage, and, therefore, would not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. 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 4, 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 has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 61 FR 4729 (February 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988

requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at http://energy.gov/gc/office-general-counsel. DOE examined this proposed rule according to UMRA and its statement of policy and determined that the proposed 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 (Public Law 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

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

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

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (February 22, 2002), and DOE's guidelines were published at 67 FR 62446 (October 7, 2002).

DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

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

The proposed regulatory action to amend the test procedure for measuring the energy efficiency of walk-in coolers and walk-in freezers 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 (Public Law 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

The proposed modifications to the test procedure for walk-in coolers and walk-in freezers adopted in this final rule incorporates testing methods contained in certain sections of the following commercial standards: AHRI Standard 1250-2009, AHRI Standard 420-2008, and ASHRAE Standard 23.1-2010. DOE has evaluated these standards and is unable to conclude whether it fully complies with the requirements of section 32(b) of the FEAA (i.e., whether it was developed in a manner that fully provides for public participation, comment, and review.) DOE will consult with both the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition, prior to prescribing a final rule.

M. Description of Materials Incorporated by Reference

In this NOPR, DOE proposes to incorporate by reference AHRI 420-2008, titled "Performance Rating of Forced-Circulation Free Delivery Unit Coolers for

Refrigeration." AHRI 420-2008 establishes the following elements for forced-circulation free-delivery unit coolers for refrigeration: definitions, test requirements, rating requirements, minimum data requirements for published ratings, marketing and nameplate data, and conformance conditions. The standard applies to forced-circulation, free-delivery unit coolers, as defined in Section 3 of this standard, operating with a volatile refrigerant fed by either direct expansion or liquid overfeed at wet conditions, dry conditions, or both.

Copies of AHRI 420-2008 may be purchased from AHRI at 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201, or by going to http://www.ahrinet.org.

DOE also proposes to incorporate by reference specific sections from the test standard published by AHRI, titled “Standard for Performance Rating of Walk-ins,” AHRI Standard 1250-2009. AHRI Standard 1250-2009 establishes definitions, test requirements, rating requirements, minimum data requirements for published ratings, operating requirements, marking and nameplate data, and conformance conditions for walk-in coolers and walk-in freezers. This testing standard applies to mechanical refrigeration equipment that consists of an integrated, single-package refrigeration unit, or as separate unit cooler and condensing unit components, where the condensing unit can be located either indoors or outdoors. Controls can be integral or can be provided by a separate party, as long as their performance is tested and certified with the listed mechanical equipment.

Copies of AHRI Standard 1250-2009 may be purchased from AHRI at 2111 Wilson Boulevard, Suite 500, Arlington, VA 22201, or by going to http://www.ahrinet.org.

DOE proposes to incorporate by reference ASHRAE Standard 23.1-2010, entitled "Methods of Testing for Performance Rating Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant." ASHRAE 23.1-2010 provides testing methods for rating the thermodynamic performance of positive displacement refrigerant compressors and condensing units that operate at subcritical temperatures of the refrigerant. This standard applies to all of the refrigerants listed in ASHRAE Standard 34, "Designation and Safety Classification of Refrigerants," that fall within the scope of positive displacement refrigerant compressors and condensing units that operate at subcritical temperatures of the refrigerant, which either (a) do not have liquid injection or (b) incorporate liquid injection that is achieved by compressor motor power.

Copies of ASHRAE 23.1-2010 may be purchased from ASHRAE at 1971 Tullie Circle NE., Atlanta, GA 30329, or by going to http://www.ashrae.org.

Finally, DOE proposes to incorporate by reference ASTM Standard C518-04, entitled “Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.” ASTM C518-04 provides a test method for measuring steady state thermal transmission through flat slab specimens using a heat flow meter apparatus, to allow determination of thermal conductance.

Copies of ASTM C518-04 may be purchased by calling ASTM Sales at 1-877-909-ASTM, or by going to http://www.astm.org.

V. Public Participation

A. Attendance at Public Meeting

The time, date and location of the public meeting are listed in the DATES and ADDRESSES sections at the beginning of this document. If you plan to attend the public meeting, please notify Ms. Regina Washington at (202) 586-1214 or Regina.Washington@ee.doe.gov.

Please note that foreign nationals visiting DOE Headquarters are subject to advance security screening procedures which require advance notice prior to attendance at the public meeting. If a foreign national wishes to participate in the public meeting, please inform DOE of this fact as soon as possible by contacting Ms. Regina Washington at (202) 586-1214 or by e-mail: Regina.Washington@ee.doe.gov so that the necessary procedures can be completed.

DOE requires visitors to have laptops and other devices, such as tablets, checked upon entry into the building. Any person wishing to bring these devices into the Forrestal

Building will be required to obtain a property pass. Visitors should avoid bringing these devices, or allow an extra 45 minutes to check in. Please report to the visitor's desk to have devices checked before proceeding through security.

Due to the REAL ID Act implemented by the Department of Homeland Security (DHS), there have been recent changes regarding ID requirements for individuals wishing to enter Federal buildings from specific states and U.S. territories. Driver's licenses from the following states or territory will not be accepted for building entry and one of the alternate forms of ID listed below will be required. DHS has determined that regular driver's licenses (and ID cards) from the following jurisdictions are not acceptable for entry into DOE facilities: Alaska, American Samoa, Arizona, Louisiana, Maine, Massachusetts, Minnesota, New York, Oklahoma, and Washington. Acceptable alternate forms of Photo-ID include a U.S. Passport or Passport Card; an Enhanced Driver's License or Enhanced ID-Card issued by the states of Minnesota, New York or Washington (Enhanced licenses issued by these states are clearly marked Enhanced or Enhanced Driver's License); or a military ID or other Federal government issued Photo-ID card.

In addition, you can attend the public meeting via webinar. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's website: https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=56&action=viewlive. Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has plans to present a prepared general statement may request that copies of his or her statement be made available at the public meeting. Such persons may submit requests, along with an advance electronic copy of their statement in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format, to the appropriate address shown in the ADDRESSES section at the beginning of this notice. The request and advance copy of statements must be received at least one week before the public meeting and may be emailed, hand-delivered, or sent by mail. DOE prefers to receive requests and advance copies via email. Please include a telephone number to enable DOE staff to make a follow-up contact, if needed.

C. Conduct of Public Meeting

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

The public meeting will be conducted in an informal, conference style. DOE will present summaries of comments received before the public meeting, allow time for prepared general statements by participants, and encourage all interested parties to share

their views on issues affecting this rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE), before the discussion of specific topics. DOE will permit, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly and comment on statements made by others. Participants should be prepared to answer questions by DOE and by other participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this rulemaking. The official conducting the public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the procedures that may be needed for the proper conduct of the public meeting.

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

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule before or after the public meeting, but no later than the date provided in the DATES section at the beginning of this proposed rule. Interested parties may submit comments using any of the methods described in the ADDRESSES section at the beginning of this notice.

Submitting comments via regulations.gov. The www.regulations.gov web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

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

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

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

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

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

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

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

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

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include (1) a description of the items, (2) whether and why such items are customarily treated as confidential within the industry, (3) whether the information is generally known by or available from other sources, (4) whether the information has previously been made available to others without obligation concerning its confidentiality, (5) an explanation of the competitive injury to the submitting person which would result from public disclosure, (6) when such information might lose its confidential character due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

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

E. Issues on Which DOE Seeks Comment

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

1) DOE requests comment on the proposed definitions for dedicated condensing unit and dedicated condensing refrigeration system.
2) DOE requests comment on the proposed definition for packaged dedicated system.
3) DOE requests comments on the proposed definitions for matched condensing unit and matched refrigeration system.
4) DOE requests comments on the proposed definitions for indoor and outdoor condensing units.
5) DOE requests comment on its proposal to change the "multiplex condensing" class designation to "unit cooler" and on its proposal to add a definition for "unit cooler" in the CFR, using the definition that currently is in AHRI 1250-2009.
6) DOE requests comment on the proposed modifications to the definition of refrigeration system.
7) DOE requests comment on the proposed definition for adaptive defrost.

8) DOE requests comment on the definition for process cooling refrigeration system. DOE also requests data or information on any other qualities, characteristics, or features specific to the refrigeration system itself (either mentioned in this section or not) that would clearly distinguish process refrigeration from other refrigeration systems or would cause a certain process refrigeration system to be unable to meet a walk-in refrigeration system standard. DOE particularly requests data for condensing units distributed individually; in the absence of any evidence that individual condensing units designed for process refrigeration are fundamentally different from other individual condensing units, DOE will have no basis for excluding such condensing units from the scope of the standards. Further, DOE requests comment on the proposal to allow 60 days after publication of the final rule for manufacturers of process cooling refrigeration systems to attain compliance with the applicable regulations.

9) DOE requests comment on the proposed definition for preparation room refrigeration. DOE requests comment on any other characteristics of preparation room refrigeration that (1) clearly distinguishes it from walk-in refrigeration systems and (2) would cause this equipment to be unable to meet a walk-in refrigeration standard.

10) DOE requests comment on the proposed definition for "refrigerated storage space." DOE requests comment on whether any further clarification is needed to clearly distinguish equipment that is subject to the standard from equipment that is not.

11) DOE requests comments on its proposal to remove from the test procedure the credit-based method for calculating the efficiency benefit of hot gas defrost.

12) DOE requests comment on the revised representation requirements.

13) DOE seeks comment on the proposed additions to the reporting requirements. See section V.E for a list of issues on which DOE seeks comment.

14) DOE seeks comment on the proposed requirements for manufacturers to label their walk-in equipment and update their marketing materials for walk-in equipment to include efficiency information. DOE also seeks comment on whether it should add a requirement specifying that the permanent nameplates on doors, panels, and refrigeration systems be visible at all times, including when the component is assembled into a complete walk-in. Further, DOE asks whether these requirements are technologically and economically feasible. DOE particularly seeks data from manufacturers regarding the cost of labeling and updating marketing materials.

15) DOE requests comment on its determination that this proposal would not introduce any changes that increase test burden or alter the measured energy use of walk-in equipment.

16) DOE seeks input on its Initial Regulatory Flexibility Analysis from businesses that would be affected by this rulemaking and will consider comments received in the development of any final rule.

VI. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

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

10 CFR Part 431

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

Issued in Washington, DC, on July 29, 2016.

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Kathleen B. Hogan
Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy

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

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

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

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

2. Section 429.12 is amended by revising paragraph (b)(6) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(b) * * *

(6) For each brand, the basic model number and the manufacturer's individual model number(s) in that basic model with the following exceptions: For external power supplies that are certified based on design families, the design family model number and the individual manufacturer's model numbers covered by that design family must be submitted for each brand. For distribution transformers, the basic model number or kVA grouping model number (depending on the certification method) for each brand must be submitted. For commercial HVAC, WH, and refrigeration equipment, an individual

manufacturer model number may be identified as a "private model number" if it meets the requirements of §429.7(b).

* * * * *

3. Section 429.53 is revised to read as follows:

§ 429.53 Walk-in coolers and walk-in freezers.

(a) Determination of represented value. (1) The requirements of §429.11 are applicable to walk-in coolers and walk-in freezers; and

(2) For each basic model of walk-in cooler and walk-in freezer refrigeration system, the annual walk-in energy factor (AWEF) must be determined either by testing, in accordance with §431.304 of this chapter and the provisions of this section, or by application of an AEDM that meets the requirements of §429.70 and the provisions of this section.

(i) Applicable test procedure. If the AWEF is determined by testing, refer to the following for the appropriate test procedure to use:

(A) Unit cooler test procedure. For unit coolers tested alone, use the test procedure in 10 CFR part 431, subpart R, appendix C. Follow the general testing

provisions in appendix C, sections 3.1 and 3.2, and the product-specific provisions in appendix C, section 3.3.

(B) Dedicated condensing unit test procedure. For dedicated condensing units tested alone, use the test procedure in 10 CFR part 431, subpart R, appendix C. Follow the general testing provisions in appendix C, sections 3.1 and 3.2, and the product-specific provisions in appendix C, section 3.4.

(C) Packaged dedicated system test procedure. For packaged dedicated systems, use the test procedure in 10 CFR part 431, subpart R, appendix C. Follow the general testing provisions in appendix C, sections 3.1 and 3.2, and the product-specific provisions in appendix C, section 3.3.

(D) Matched refrigeration system test procedure. For matched refrigeration systems, use the test procedure in 10 CFR part 431, subpart R, appendix C. Follow the general testing provisions in appendix C, sections 3.1 and 3.2, and the product-specific provisions in appendix C, section 3.3. It is not necessary to rate a matched refrigeration system if the constituent unit cooler(s) and dedicated condensing unit have been tested and rated as specified paragraphs (a)(2)(i)(A) and (B) , respectively. However, if a manufacturer wishes to represent the efficiency of the matched refrigeration system as distinct from the efficiency of either constituent component, or if the manufacturer cannot rate one or both of the constituent components using the specified method, the manufacturer must test and certify the matched refrigeration system as specified in this paragraph (a)(2)(i)(D).

(ii) Units to be tested. (A) If the represented value for a given refrigeration system basic model is determined through testing, the general requirements of §429.11 apply; and

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

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

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

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

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

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

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

(C) The represented value of net capacity shall be the average of the capacities measured for the sample selected.

(iii) Alternative efficiency determination methods. In lieu of testing, a represented value of AWEF for a basic model of a walk-in cooler or freezer refrigeration system must be determined through the application of an AEDM pursuant to the requirements of §429.70 and the provisions of this section, where:

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

(B) The represented value of net capacity must be the net capacity simulated by the AEDM.

(3) For each basic model of walk-in cooler and walk-in freezer panels, display doors, and non-display doors, the R-value and/or energy consumption must be determined by testing, in accordance with §431.304 of this chapter and the provisions of this section.

(i) Applicable test procedure. Refer to the following for the appropriate test procedure:

(A) Display door test procedure. For determining the energy consumption and rated surface area in square feet, use the test procedure in 10 CFR part 431, subpart R, appendix A.

(B) Non-display door test procedure. For determining the energy consumption and rated surface area in square feet, use the test procedure in 10 CFR part 431, subpart R, appendix A. For determining the R-value, use the test procedure in 10 CFR part 431, subpart R, appendix B.

(C) Panel test procedure. For determining the R-value, use the test procedure in 10 CFR part 431, subpart R, appendix B.

(ii) Units to be tested. (A) The general requirements of §429.11 apply; and

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(b) Certification reports. (1) The requirements of §429.12 are applicable to manufacturers of walk-in cooler and walk-in freezer panels, doors, and refrigeration systems, and;

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

(i) For doors: The door type, R-value of the door insulation, and a declaration that the manufacturer has incorporated the applicable design requirements. In addition, for those walk-in coolers and walk-in freezers with transparent reach-in doors and windows: The glass type of the doors and windows (e.g., double-pane with heat reflective treatment, triple-pane glass with gas fill), and the power draw of the antisweat heater in watts per square foot of door opening.

(ii) For walk-in cooler and walk-in freezer panels: The R-value of the insulation.

(iii) For walk-in cooler and walk-in freezer refrigeration systems: The motor's purpose (i.e., evaporator fan motor or condenser fan motor), the horsepower, and a declaration that the manufacturer has incorporated the applicable design requirements.

(3) Pursuant to §429.12(b)(13), starting on June 5, 2017, a certification report must include the following public product-specific information in addition to the information listed in paragraph (b)(2) of this section:

(i) For walk-in cooler and walk-in freezer doors: The door energy consumption and rated surface area in square feet.

(ii) For refrigeration systems that are medium-temperature dedicated condensing units, medium-temperature packaged dedicated systems, or medium-temperature matched systems: The refrigeration system AWEF, net capacity, and the configuration tested for certification (e.g., condensing unit only, unit cooler only, or matched pair).

(4) Pursuant to §429.12(b)(13), starting on June 5, 2017, a certification report must include the following product-specific information in addition to the information listed in paragraphs (b)(2) and (3) of this section: For doors: the rated power of each light, heater wire, and/or other electricity consuming device associated with each basic model of display and non-display door; and whether such device(s) has a timer, control system, or other demand-based control reducing the device’s power consumption.

(5) Starting on [COMPLIANCE DATE OF FINAL RULE FOR UPDATED REFRIGERATION STANDARDS], a certification report must include the following public product-specific information in addition to the information listed in paragraph (b)(2) of this section:

(i) For refrigeration systems that are low-temperature dedicated condensing units, low-temperature matched systems, or medium and low-temperature unit coolers: The refrigeration system AWEF, net capacity, and the configuration tested for certification (e.g., condensing unit only, unit cooler only, or matched pair).

4. Section 429.110 is amended by revising paragraph (e)(2) to read as follows:

§ 429.110 Enforcement testing.

* * * * *

(e) * * *

(2) For automatic commercial ice makers; commercial refrigerators, freezers, and refrigerator-freezers; refrigerated bottled or canned vending machines; commercial air conditioners and heat pumps; commercial packaged boilers; commercial warm air furnaces; commercial water heating equipment; and walk-in cooler and freezer refrigeration systems, DOE will use an initial sample size of not more than four units and

follow the sampling plans in appendix B of this subpart (Sampling Plan for Enforcement Testing of Covered Equipment and Certain Low-Volume Covered Products).

* * * * *

4. Section 429.134 is amended by adding paragraph (l) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(l) Walk-in coolers and walk-in freezers. (1) If DOE determines that a basic model of a panel, door, or refrigeration system for walk-in coolers or walk-in freezers fails to meet an applicable energy conservation standard, then the manufacturer of that basic model is responsible for the noncompliance with the applicable standard. If DOE determines that a complete walk-in cooler or walk-in freezer or component thereof fails to meet an applicable energy conservation standard, then the manufacturer of that walk-in cooler or walk-in freezer is responsible for the noncompliance with the applicable standard, except that the manufacturer of a complete walk-in cooler or walk-in freezer is not responsible either for the use of components that were certified and labeled as compliant by another party that are later found to be noncompliant.

(2) Verification of refrigeration system net capacity. The net capacity of the refrigeration system basic model will be measured pursuant to the test requirements of 10

CFR part 431, subpart R, appendix C for each unit tested. The results of the measurement(s) will be averaged and compared to the value of net capacity certified by the manufacturer. The certified net capacity will be considered valid only if the average measured net capacity is within five percent of the certified net capacity.

(i) If the certified net capacity is found to be valid, the certified net capacity will be used as the basis for calculating the AWEF of the basic model.

(ii) If the certified refrigeration capacity is found to be invalid, the average measured refrigeration capacity will serve as the basis for calculating the annual energy consumption for the basic model.

(3) Verification of door surface area. The surface area of a display door or non-display door basic model will be measured pursuant to the requirements of 10 CFR part 431, subpart R, appendix A for each unit tested. The results of the measurement(s) will be averaged and compared to the value of the surface area certified by the manufacturer. The certified surface area will be considered valid only if the average measured surface area is within one percent of the certified surface area.

(i) If the certified surface area is found to be valid, the certified surface area will be used as the basis for calculating the maximum energy consumption (kWh/day) of the basic model.

(ii) If the certified surface area is found to be invalid, the average measured surface area will serve as the basis for calculating the maximum energy consumption (kWh/day) of the basic model.

(4) For each basic model of walk-in cooler and freezer door, DOE will calculate the door's energy consumption using the power listed on the nameplate of each electricity consuming device shipped with the door. If an electricity consuming device shipped with a walk-in door does not have a nameplate or such nameplate does not list the device's power, then DOE will use the device's "rated power" included in the door's certification report.

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

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

6. Section 431.302 is amended by:

a. Adding in alphabetical order, definitions for "Adaptive defrost," "Dedicated condensing unit," "Dedicated condensing refrigeration system," "Indoor dedicated condensing refrigeration system," "Matched condensing unit," "Matched refrigeration system," "Outdoor dedicated condensing refrigeration system," "Packaged dedicated

system," "Preparation room refrigeration," "Refrigerated storage space," "Unit cooler", and "Walk-in process cooling refrigeration system"; and

b. Revising the definition of "refrigeration system";

The revision and additions read as follows:

§ 431.302 Definitions concerning walk-in coolers and walk-in freezers.

Adaptive defrost means a defrost control system that reduces defrost frequency by initiating defrosts or adjusting the number of defrosts per day in response to operating conditions (e.g., moisture levels in the refrigerated space, measurements that represent coil frost load) rather than initiating defrost strictly based on compressor run time or clock time.

* * * * *

Dedicated condensing unit means a positive displacement condensing unit that is part of a refrigeration system (as defined in 10 CFR 431.302) and is an assembly that

(1) Includes 1 or more compressors, a condenser, and one refrigeration circuit; and

(2) Is designed to serve one refrigerated load.

Dedicated condensing refrigeration system means either:

(1) A dedicated condensing unit;

(b) A packaged dedicated system; or

(3) A matched refrigeration system.

* * * * *

Indoor dedicated condensing refrigeration system means a dedicated condensing refrigeration system that is not an outdoor dedicated refrigeration system.

* * * * *

Matched condensing unit means a dedicated condensing unit that is distributed in commerce with one or more unit cooler(s) specified by the condensing unit manufacturer.

Matched refrigeration system (also called matched pair) means a refrigeration system including the matched condensing unit and the one or more unit coolers with which it is distributed in commerce.

Outdoor dedicated condensing refrigeration system means a dedicated condensing unit, packaged dedicated system, or matched refrigeration system in which the assembly (including the compressor(s) and condenser) is encased and the system is capable of maintaining a net capacity at the 35 °F outdoor temperature condition that is no less than 65 percent of the net capacity measured at the 95 °F outdoor temperature condition for a period of no less than one hour.

Packaged dedicated system means a refrigeration system (as defined in 10 CFR 431.302) that is a single-package assembly that includes one or more compressors, a condenser, a means for forced circulation of refrigerated air, and elements by which heat is transferred from air to refrigerant, without any element external to the system imposing resistance to flow of the refrigerated air.

* * * * *

Preparation room refrigeration means a unit cooler that is designed for use in a room occupied by personnel who are preparing food and that is characterized by low outlet air velocity, evaporator temperature between 30 and 55 degrees Fahrenheit, and electric or hot gas defrost.

* * * * *

Refrigerated storage space means a space held at refrigerated (as defined in 10 CFR 431.302) temperatures.

* * * * *

Refrigeration system means the mechanism (including all controls and other components integral to the system's operation) used to create the refrigerated environment in the interior of a walk-in cooler or freezer, consisting of:

(1) A dedicated condensing refrigeration system (as defined in 10 CFR 431.302); or

(2) A unit cooler.

* * * * *

Unit cooler means an assembly, including means for forced air circulation and elements by which heat is transferred from air to refrigerant without any element external to the cooler imposing air resistance.

* * * * *

Walk-in process cooling refrigeration system means a refrigeration system that is used exclusively for cooling food or other substances from one temperature to another. The basic model of such a system must either:

(1) Be distributed in commerce with an enclosure consisting of panels and door(s) such that the assembled product has a refrigerating capacity of at least 100 Btu/h per cubic foot of enclosed internal volume; or

(2) Be a unit cooler having an evaporator coil that is at least four-and-one-half (4.5) feet in height and whose height is at least one-and-one-half (1.5) times the width.

7. Section 431.303 is amended by:

a. Redesignating paragraph (b)(1) as (b)(2), and adding new paragraph (b)(1);

b. Revising newly redesignated paragraph (b)(2), by removing "§431.304", and adding in its place, "§431.304 and appendix C to subpart R of part 431.

c. Redesignating paragraphs (c) and (d) as paragraphs (d) and (e), respectively, and adding new paragraph (c);

d. Revising newly redesignated paragraph (d)(1), by removing "appendix A to subpart R of part 431" and adding in its place, "appendix B to subpart R of part 431".

The revisions and addition read as follows:

§431.303 Materials incorporated by reference.

* * * * *

(b) * * *

(1) ANSI/AHRI 420-2008, ("AHRI 420-2008"), "Performance Rating of Forced-Circulation Free-Delivery Unit Coolers for Refrigeration," Copyright 2008, IBR approved for appendix C to subpart R of part 431.

* * * * *

(c) ASHRAE. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1971 Tullie Circle NE., Atlanta, GA 30329, or http://www.ashrae.org/.

(1) ANSI/ASHRAE Standard 23.1-2010, ("ASHRAE 23.1-2010"), "Methods of Testing for Rating the Performance of Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Temperatures of the Refrigerant," Copyright 2010, IBR approved for appendix C to subpart R of part 431.

(2) [Reserved].

* * * * *

8. Section 431.304 is amended by revising paragraph (b) and removing paragraph (c) to read as follows:

§ 431.304 Uniform test method for the measurement of energy consumption of walk-in coolers and walk-in freezers.

* * * * *

(b) Determine the energy efficiency and/or energy consumption of the specified walk-in cooler and walk-in freezer components by conducting the appropriate test procedure as follows:

(1) Determine the U-factor, conduction load, and energy use of walk-in cooler and walk-in freezer display panels by conducting the test procedure set forth in appendix A to this subpart.

(2) Determine the energy use of walk-in cooler and walk-in freezer display doors and non-display doors by conducting the test procedure set forth in appendix A to this subpart.

(3) Determine the R-value of walk-in cooler and walk-in freezer non-display panels and non-display doors by conducting the test procedure set forth in appendix B to this subpart.

(4) Determine the AWEF and net capacity of walk-in cooler and walk-in freezer refrigeration systems by conducting the test procedure set forth in appendix C to this subpart.

9. Section 431.305 is added to read as follows:

§ 431.305 Walk-in coolers and walk-in freezers labeling requirements.

(a) Panel nameplate—(1) Required information. The permanent nameplate of a walk-in cooler or walk-in freezer panel for which standards are prescribed in § 431.306 must be marked clearly with the following information:

(i) The rated R-value;

(ii) The panel brand;

(iii) The panel model number;

(iv) The date of manufacture of the panel; and

(v) The statement, “This panel is designed and certified for use in walk-in cooler and freezer applications.”

(2) Display of required information. All orientation, spacing, type sizes, typefaces, and line widths to display this required information must be the same as or similar to the display of the other performance data included on the panel’s permanent nameplate. The R-value, as appropriate to a given panel model, must be identified in the form “R-value ____.” The model number must be in one of the following forms: “Model ____” or “Model number ____” or “Model No. ____.”

(b) Door nameplate—(1) Required information. The permanent nameplate of a walk-in cooler or walk-in freezer door for which standards are prescribed in § 431.306 must be marked clearly with the following information:

(i) The rated energy consumption;

(ii) The door brand;

(iii) The door model number;

(iv) The date of manufacture of the door; and

(v) The statement, “This door is designed and certified for use in walk-in cooler and freezer applications.”

(2) Display of required information. All orientation, spacing, type sizes, typefaces, and line widths to display this required information must be the same as or similar to the display of the other performance data included on the door's permanent nameplate. The energy consumption, as appropriate to a given door model, must be identified in the form “EC ____.” The model number must be in one of the following forms: “Model ____” or “Model number ____” or “Model No. ____.”

(c) Refrigeration system nameplate—(1) Required information. The permanent nameplate of a walk-in cooler or walk-in freezer refrigeration system for which standards are prescribed in § 431.306 must be marked clearly with the following information:

(i) The annual walk-in energy factor;

(ii) The refrigeration system brand;

(iii) The refrigeration system model number;

(iv) The date of manufacture of the refrigeration system; and

(v) The statement, “This refrigeration system is designed and certified for use in walk-in cooler and freezer applications.”

(2) Process cooling refrigeration systems. The permanent nameplate of a process cooling refrigeration system (as defined in § 431.302) must be marked clearly with the following information:

(i)The refrigeration system brand;

(ii) The refrigeration system model number;

(iii) The date of manufacture of the refrigeration system; and

(iv) The statement, "This refrigeration system is designed only for use in walk-in cooler and freezer process cooling refrigeration applications."

(2) Display of required information. All orientation, spacing, type sizes, typefaces, and line widths to display this required information must be the same as or similar to the display of the other performance data included on the refrigeration system's permanent nameplate. The annual walk-in energy factor, as appropriate to a given refrigeration system model, must be identified in the form "AWEF ____." The model number must be in one of the following forms: "Model ____" or "Model number ____" or "Model No. ____."

(d) Disclosure of efficiency information in marketing materials. (1) The same information that must appear on a walk-in cooler or walk-in freezer component's

permanent nameplate pursuant to paragraph (a)(1) of this section, must also be prominently displayed:

(i) On each page of a catalog that lists the component; and

(ii) In other materials used to market the component.

10. Appendix A to subpart R of part 431 is amended by:

a. Removing and reserving sections 3.2 and 3.3;

b. Revising section 3.4;

c. Redesignating sections 3.5 and 3.6 as sections 3.6 and 3.7.

d. Adding new section 3.5;

e. Revising newly redesignated section 3.6; and

f. Revising Table A.1.

The revisions and additions read as follows:

Appendix A to Subpart R of Part 431—Uniform Test Method for the Measurement of Energy Consumption of the Components of Envelopes of Walk-In Coolers and Walk-In Freezers

* * * * *

3.2 [Reserved]

3.3 [Reserved]

3.4 Surface area means the area of the surface of the walk-in component that would be external to the walk-in cooler or walk-in freezer as appropriate.

3.5 Rated power means the electricity consuming device's power as specified on the device's nameplate. If the device does not have a nameplate or such nameplate does not list the device's power, then the rated power must be read from the device's product data sheet.

3.6 Rating conditions means, unless explicitly stated otherwise, all conditions shown in Table A.1 of this section.

Table A.1—Temperature Conditions

Internal Temperatures (cooled space within the envelope)	
Cooler Dry Bulb Temperature	35 °F
Freezer Dry Bulb Temperature	−10 °F
External Temperatures (space external to the envelope)	

Freezer and Cooler Dry Bulb Temperatures	75 °F.

* * * * *

11. Adding appendices B and C to subpart R of part 431 to read as follows:

Appendix B to Subpart R of Part 431—Uniform Test Method for the Measurement of R-Value for Envelope Components of Walk-In Coolers and Walk-in Freezers

1.0 Scope

This appendix covers the test requirements used to measure the R-value of non-display panels and non-display doors of a walk-in cooler or walk-in freezer.

2.0 Definitions

The definitions contained in § 431.302 apply to this appendix.

3.0 Additional Definitions

3.1 Edge region means a region of the panel that is wide enough to encompass any framing members. If the panel contains framing members (e.g. a wood frame) then the width of the edge region must be as wide as any framing member plus an additional 2 in. ±0.25 in.

4.0 Test Methods, Measurements, and Calculations

4.1 The R value shall be the 1/K factor multiplied by the thickness of the panel.

4.2 The K factor shall be based on ASTM C518 (incorporated by reference; see § 431.303).

4.3 For calculating the R value for freezers, the K factor of the foam at 20 ±1 degrees Fahrenheit (average foam temperature) shall be used. Test results from a test sample 1 ±0.1-inches in thickness may be used to determine the R value of panels with various foam thickness as long as the foam is of the same final chemical form.

4.4 For calculating the R value for coolers, the K factor of the foam at 55 ±1 degrees Fahrenheit (average foam temperature) shall be used. Test results from a test sample 1 ±0.1-inches in thickness may be used to determine the R value of panels with various foam thickness as long as the foam is of the same final chemical form.

4.5 Foam shall be tested after it is produced in its final chemical form. For foam produced inside of a panel ("foam-in-place"), "final chemical form" means the foam is cured as intended and ready for use as a finished panel. For foam produced as board stock (typically polystyrene), "final chemical form" means after extrusion and ready for assembly into a panel or after assembly into a panel. Foam from foam-in-place panels must not include any structural members or non-foam materials. Foam produced as board stock may be tested prior to its incorporation into a final panel. A test sample 1 ±0.1-

inches in thickness must be taken from the center of a panel and any protective skins or facers must be removed. A high-speed band-saw and a meat slicer are two types of recommended cutting tools. Hot wire cutters or other heated tools must not be used for cutting foam test samples. The two surfaces of the test sample that will contact the hot plate assemblies (as defined in ASTM C518 (incorporated by reference, see § 431.303)) must both maintain ±0.03 inches flatness tolerance and also maintain parallelism with respect to one another within ±0.03 inches. Testing must be completed within 24 hours of samples being cut for testing.

4.6 Internal non-foam member and/or edge regions shall not be considered when testing in accordance with ASTM C518.

4.7 For panels consisting of two or more layers of dissimilar insulating materials (excluding facers or protective skins), test each material as described in sections 4.1 through 4.6 of this appendix. For a panel with N layers of insulating material, the overall R-Value shall be calculated as follows:

$$R_{panel} = \sum_{i=1}^{N} \frac{t_i}{k_i}$$

Where:

k_i is the k factor of the ith material as measured by ASTM C518, (incorporated by reference, see § 431.303)

t_i is the thickness of the ith material that appears in the panel, and

N is the total number of material layers that appears in the panel.

Appendix C to Subpart R of Part 431—Uniform Test Method for the Measurement of Net Capacity and AWEF of Walk-In Coolers and Walk-in Freezer Refrigeration Systems

1.0 Scope

This appendix covers the test requirements used to determine the net capacity and the AWEF of the refrigeration system of a walk-in cooler or walk-in freezer.

2.0 Definitions

The definitions contained in § 431.302 and AHRI 1250-2009 (incorporated by reference; see § 431.303) apply to this appendix. When definitions in standards incorporated by reference are in conflict or when they are in conflict with this section, the hierarchy of precedence shall be in the following order: § 431.302, AHRI 1250-2009 (incorporated by reference; see § 431.303), and then either AHRI 420-2008 (incorporated by reference; see § 431.303) for unit coolers or ASHRAE 23.1-2010 (incorporated by reference; see § 431.303) for dedicated condensing units.

3.0 Test Methods, Measurements, and Calculations

Determine the Annual Walk-in Energy Factor (AWEF) and net capacity of walk-in cooler and walk-in freezer refrigeration systems by conducting the test procedure set forth in AHRI 1250-2009 (incorporated by reference; see § 431.303), with the modifications to that test procedure provided in this section. When standards that are incorporated by reference are in conflict or when they are in conflict with this section, the hierarchy of precedence shall be in the following order: § 431.302, AHRI 1250-2009 (incorporated by reference; see § 431.303), and then either AHRI 420-2008 (incorporated by reference; see § 431.303) or ASHRAE 23.1-2010 (incorporated by reference; see § 431.303).

3.1. General modifications: Test Conditions and Tolerances.

When conducting testing in accordance with AHRI 1250-2009 (incorporated by reference; see § 431.303), the following modifications must be made.

3.1.1. In Table 1, Instrumentation Accuracy, refrigerant temperature measurements shall have a tolerance of ±0.5 F for unit cooler in/out, ±1.0 F for all other temperature measurements.

3.1.2. In Table 2, Test Operating and Test Condition Tolerances for Steady-State Test, electrical power frequency shall have a Test Condition Tolerance of 1 percent.

3.1.3. In Table 2, the Test Operating Tolerances and Test Condition Tolerances for Air Leaving Temperatures shall be deleted.

3.1.4. In Tables 2 through 14, the Test Condition Outdoor Wet Bulb Temperature requirement and its associated tolerance apply only to units with evaporative cooling.

3.1.5. Tables 15 and 16 shall be modified to read as follows:

Table 15. Refrigerator Unit Cooler

Test Description	**Unit Cooler Air Entering Dry-Bulb, ˚F**	**Unit Cooler Air Entering Relative Humidity, %**	**Saturated Suction Temp, ˚F**	**Liquid Inlet Saturation Temp, ˚F**	**Liquid Inlet Subcooling Temp, ˚F**	**Compressor Capacity**	**Test Objective**
Off Cycle Fan Power	35	<50	-	-	-	Compressor Off	Measure fan input power during compressor off cycle
Refrigeration Capacity Suction A	35	<50	25	105	9	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler
Refrigeration Capacity Suction B	35	<50	20	105	9	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler

Note: Superheat to be set according to equipment specification in equipment or installation manual. If no superheat specification is given, a default superheat value of 6.5 °F shall be used. The superheat setting used in the test shall be reported as part of the standard rating.

Table 16. Freezer Unit Cooler							
Test Description	**Unit Cooler Air Entering Dry-Bulb, ˚F**	**Unit Cooler Air Entering Relative Humidity, %**	**Saturated Suction Temp, ˚F**	**Liquid Inlet Saturation Temp, ˚F**	**Liquid Inlet Subcooling Temp, ˚F**	**Compressor Capacity**	**Test Objective**
Off Cycle Fan Power	-10	<50	-	-	-	Compressor Off	Measure fan input power during compressor off cycle
Refrigeration Capacity Suction A	-10	<50	-20	105	9	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler
Refrigeration Capacity Suction B	-10	<50	-26	105	9	Compressor On	Determine Net Refrigeration Capacity of Unit Cooler
Defrost	-10	Various	-	-	-	Compressor Off	Test according to Appendix C Section C11
Note: Superheat to be set according to equipment specification in equipment or installation manual. If no superheat specification is given, a default superheat value of 6.5 °F shall be used. The superheat setting used in the test shall be reported as part of the standard rating.							

3.2. General Modifications: Methods of Testing

When conducting testing in accordance with appendix C of AHRI 1250-2009 (incorporated by reference; see § 431.303), the following modifications must be made.

3.2.1. In appendix C, section C3.1.6, any refrigerant temperature measurements upstream and downstream of the unit cooler may use sheathed sensors immersed in the flowing refrigerant instead of thermometer wells.

3.2.2. It is not necessary to perform composition analysis of refrigerant (appendix C, section C3.3.6) or refrigerant oil concentration testing (appendix C, section C3.4.6).

3.2.3. In appendix C, section C3.4.5, for verification of sub-cooling downstream of mass flow meters, only the sight glass and a temperature sensor located on the tube surface under the insulation are required.

3.2.4. In appendix C, section C3.5, regarding unit cooler fan power measurements, for a given motor winding configuration, the total power input shall be measured at the highest nameplate voltage. For three-phase power, voltage imbalances shall be no more than 2 percent from phase to phase.

3.2.5. In the test setup (appendix C, section C8.3), the liquid line and suction line shall be constructed of pipes of the manufacturer-specified size. The pipe lines shall be insulated with a minimum total thermal resistance equivalent to 1⁄2-inch thick insulation having a flat-surface R-Value of 3.7 ft^2-°F-hr/Btu per inch or greater. Flow meters need not be insulated but must not be in contact with the floor. The lengths of the connected liquid line and suction line shall be 25 feet +/- 3 inches, not including the requisite flow meters, each. Of this length, no more than 15 feet shall be in the conditioned space. Where there are multiple branches of piping, the maximum length of piping

applies to each branch individually as opposed to the total length of the piping.

3.3. Matched systems, packaged dedicated systems, and unit coolers tested alone: Use the test method in AHRI 1250-2009 (incorporated by reference; see § 431.303), appendix C as the method of test for matched refrigeration systems, packaged dedicated systems, or unit coolers tested alone, with the following modifications:

3.3.1. For unit coolers tested alone, use test procedures described in AHRI 1250-2009 (incorporated by reference; see § 431.303) for testing unit coolers for use in mix-match system ratings, except that for the test conditions in Tables 15 and 16, use the Suction A saturation condition test points only. Also for unit coolers tested alone, use calculations in section 7.9 to determine AWEF and net capacity described in AHRI 1250-2009 (incorporated by reference; see § 431.303) for unit coolers matched to parallel rack systems.

3.3.2. In appendix C, section C.13, the version of AHRI Standard 420 used for test methods, requirements, and procedures shall be ANSI/AHRI 420-2008 (incorporated by reference; see § 431.303).

3.3.3. Use appendix C, section C10 of AHRI 1250-2009 for off-cycle evaporator fan testing, with the exception that evaporator fan controls using periodic stir cycles shall be adjusted so that the greater of a 50% duty cycle (rather than a 25% duty cycle) or the manufacturer default is used for measuring off-cycle

fan energy. For variable-speed controls, the greater of 50% fan speed (rather than 25% fan speed) or the manufacturer's default fan speed shall be used for measuring off-cycle fan energy.

3.3.4. Use appendix C, section C11 of AHRI 1250-2009 for defrost testing. The Frost Load Condition Defrost Test (C11.1.1) is optional.

3.3.4.1. If the frost load condition defrost test is performed:

3.3.4.1.1 Operate the unit cooler at the dry coil conditions as specified in appendix C, section C11.1 to obtain dry coil defrost energy, DF_d, in W-h.

3.3.4.1.2 Operate the unit cooler at the frost load conditions as specified in appendix C, sections C11.1 and C11.1.1 to obtain frosted coil defrost energy, DF_f, in W-h.

3.3.4.1.3 The number of defrosts per day, N_{DF}, shall be calculated from the time interval between successive defrosts at the frost load conditions.

3.3.4.1.4 Use appendix C, equations C13 and C14 in section C11.3 to calculate, respectively, the daily average defrost energy, DF, in W-h and the daily contribution of the load attributed to defrost Q_{DF} in Btu.

3.3.4.1.5 The defrost adequacy requirements in appendix C, section C11.3 shall apply.

3.3.4.2. If the frost load test is not performed:

3.3.4.2.1 Operate the unit cooler at the dry coil conditions as specified in appendix C, section C11.1 to obtain dry coil defrost energy, DF_d, in W-h.

3.3.4.2.2 The frost load defrost energy, DF_f, in W-h shall be equal to 1.05 multiplied by the dry coil energy consumption, DF_d, measured using the dry coil condition test in appendix C, section C11.1.

3.3.4.2.3 The number of defrosts per day N_{DF} used in subsequent calculations shall be 4.

3.3.4.2.4 Use appendix C, equation C13 in section C11.3 to calculate the daily average defrost energy, DF, in W-h.

3.3.4.2.5 The daily contribution of the load attributed to defrost Q_{DF} in Btu shall be calculated as follows:

$$Q_{DF} = 0.95 \times 3.412 \text{ Btu/W-h} \times \frac{2.05 \ \times DF_d}{2} \times 4$$

Where:

DF_d = the defrost energy, in W-h, measured at the dry coil condition

3.3.5. If a unit has adaptive defrost:

3.3.5.1. When testing to certify to the energy conservation standards in 10 CFR § 431.306, do not perform the optional test for adaptive or demand defrost in appendix C, section C11.2.

3.3.5.2. When determining the represented value of the calculated benefit for the inclusion of adaptive defrost, conduct the optional test for adaptive or demand defrost in appendix C, section C11.2 to establish the maximum time interval allowed between dry coil defrosts. Then, calculate N_{DF} (the number of defrosts per day) by averaging the measured time in hours between successive defrosts for the dry coil condition with the time in hours between successive defrosts for the frosted coil condition, and dividing 24 by this average time. The measured time between defrosts cannot be greater than 24 hours. (The time between successive defrosts for the frosted coil condition is found as specified in section 3.3.4 of this appendix: that is, if the optional frosted coil test was performed, the time between successive defrosts for the frosted coil condition is found by performing the frosted coil test as specified in section 3.3.4.1; and if the optional frosted coil test was not performed, the time between successive defrosts for the frosted

coil condition shall be set to 4 as specified in section 3.3.4.2.) Use this new value of N_{DF} in subsequent calculations.

3.3.6. For matched refrigeration systems, calculate the AWEF using the calculations in AHRI 1250-2009 (incorporated by reference; see § 431.303), section 7.4, 7.5, 7.6, or 7.7, as applicable. In section 7.6, use the following equations in place of equations 67 and 83, respectively:

Equation 67:

$$b = \frac{EER_{SS}{}^{k=1}(t_{IH}) - EER_{SS}{}^{k=2}(t_{IIH}) - d \times \left[EER_{SS}{}^{k=1}(t_{IH}) - EER_{SS}{}^{k=i}(t_{VH})\right]}{t_{IH} - t_{IIH} - d \times [t_{IH} - t_{VH}]}$$

Equation 83:

$$b = \frac{EER_{SS}{}^{k=1}(t_{IL}) - EER_{SS}{}^{k=2}(t_{IIL}) - d \times \left[EER_{SS}{}^{k=1}(t_{IL}) - EER_{SS}{}^{k=i}(t_{VL})\right]}{t_{IL} - t_{IIL} - d \times [t_{IL} - t_{VL}]}$$

3.3.7. For unit coolers tested alone, calculate the AWEF and net capacity using the calculations in AHRI 1250-2009, (incorporated by reference; see § 431.303), section 7.9. If the unit cooler has variable-speed evaporator fans that vary fan speed in response to load, then:

3.3.7.1. When testing to certify compliance with the energy conservation standards in § 431.306, fans shall operate at full speed during on-cycle

operation. Do not conduct the calculations in AHRI 1250-2009 section 7.9.3. Instead, use AHRI 1250-2009 section 7.9.2 to determine the system's AWEF.

3.3.7.2. When calculating the benefit for the inclusion of variable-speed evaporator fans that modulate fan speed in response to load for the purposes of making representations of efficiency, use AHRI 1250-2009 section 7.9.3 to determine the system AWEF.

3.4. Dedicated condensing units that are not matched for testing and are not packaged dedicated systems.

3.4.1. Refer to appendix C, section C.12 of AHRI 1250-2009 (incorporated by reference; see § 431.303), for the method of test for dedicated condensing units. The version of ASHRAE Standard 23 used for test methods, requirements, and procedures shall be ANSI/ASHRAE Standard 23.1-2010 (incorporated by reference; see § 431.303). When applying this test method, use the applicable test method modifications listed in sections 3.1 and 3.2 of this appendix. For the test conditions in AHRI 1250-2009 Tables 11, 12, 13, and 14, use the Suction A condition test points only.

3.4.2. Calculate the AWEF and net capacity for dedicated condensing units using the calculations in AHRI 1250-2009 (incorporated by reference; see 10 CFR

§ 431.303) section 7.8. Use the following modifications to the calculations in lieu of unit cooler test data:

3.4.2.1. For purposes of calculating enthalpy leaving the unit cooler as part of the calculating gross capacity, the saturated refrigerant temperature at the evaporator coil exit, T_{evap}, shall be 25 °F for medium-temperature systems (coolers) and -20 °F for low-temperature systems (freezers).

3.4.2.2. The on-cycle evaporator fan power in watts, $EF_{comp,on}$, shall be calculated as follows:

For medium-temperature systems (coolers), $EF_{comp,on} = 0.013 \times q_{mix,cd}$

For low-temperature systems (freezers), $EF_{comp,on} = 0.016 \times q_{mix,cd}$

Where:

$q_{mix,cd}$ is the gross cooling capacity of the system in Btu/h, found by a single test at the Capacity A, Suction A condition for outdoor units and the Suction A condition for indoor units.

3.4.2.3. The off-cycle evaporator fan power in watts, $EF_{comp,off}$, shall be calculated as follows:

$EF_{comp,off} = 0.2 \times EF_{comp,on}$

Where:

$EF_{comp,on}$ is the on-cycle evaporator fan power in watts.

3.4.2.4. The daily defrost energy use in watt-hours, DF, shall be calculated as follows:

For medium-temperature systems (coolers), DF = 0

For low-temperature systems (freezers), $DF = 8.5 \times 10^{-3} \times q_{mix,cd}^{1.27} \times N_{DF}$

Where:

$q_{mix,cd}$ is the gross cooling capacity of the system in Btu/h, found by a single test at the Capacity A, Suction A condition for outdoor units and the Suction A condition for indoor units, and

N_{DF} is the number of defrosts per day, equal to 4.

3.4.2.5. The daily defrost heat load contribution in Btu, Q_{DF}, shall be calculated as follows:

For medium-temperature systems (coolers), $Q_{DF} = 0$

For low-temperature systems (freezers), $Q_{DF} = 0.95 \times DF \times 3.412$

Where:

DF is the daily defrost energy use in watt-hours.

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