DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket No. EERE–2013–BT–TP–0029 and EERE–2011–BT–DET–0072]

RIN 1904–AD44, 1904–AC66, and 1904–AC51

Energy Conservation Program: Final Coverage Determination; Test Procedures for Miscellaneous Refrigeration Products

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

ACTION: Final rule.

SUMMARY: This final rule classifies a variety of refrigeration products that are collectively described as ''miscellaneous refrigeration products''—*i.e.,* ''MREFs,'' as a covered product under Part A of Title III of the Energy Policy and Conservation Act (''EPCA''), as amended. These products include different types of refrigeration devices that include one or more compartments that maintain higher temperatures than typical refrigerator compartments, such as wine chillers and beverage coolers. Additionally, this final rule amends or establishes certain definitions related to these products and establishes test procedures for certain classes of MREFs. These procedures are based an earlier proposal the Department of Energy published on December 16, 2014, along with additional feedback provided as part of a negotiated rulemaking effort focusing on these products. The test procedures follow the same general methodology as those currently in place for refrigerators, refrigerator-freezers, and freezers. Through this rule, the test procedures for MREFs will be codified. This rule also establishes similar clarifying amendments for freezers.

DATES: *Effective Date:* The effective date of this rule is August 17, 2016, except for 10 CFR 429.14(c)(2) and (3), which are stayed indefinitely. DOE will publish a document in the **Federal Register** announcing the effective date of these provisions.

Compliance Date: Except as noted in the definitions for, freezers, refrigerator, and refrigerator-freezers in 10 CFR 430.2, the final rule changes related to the test procedure provisions detailed in this document will be mandatory for representations of energy use starting January 17, 2017.

ADDRESSES: The docket, which includes **Federal Register** documents, public meeting attendee lists and transcripts, comments, and other supporting documents/materials, is available for review at *regulations.gov*. All documents in the docket are listed in the *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.

A link to the docket Web page can be found at: *https://www.regulations.gov/#!docketDetail;D=EERE-2013-BT-TP-0029* or *https://www.regulations.gov/#!docketDetail;D=EERE-2011-BT-DET-0072*. These Web pages will contain a link to this document on the *regulations.gov* site. The *regulations.gov* Web page will contain simple instructions on how to access all documents, including public comments, in the dockets.

For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586–2945 or by email: *Brenda.Edwards@ee.doe.gov*.

FOR FURTHER INFORMATION CONTACT: Joseph Hagerman, 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 Email: *Joseph.Hagerman@ee.doe.gov*.

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. Email: *Michael.Kido@hq.doe.gov*.

SUPPLEMENTARY INFORMATION:

Table of Contents

I. Authority and Background

A. General Rulemaking Authority

Title III of the Energy Policy and Conservation Act of 1975, as amended (42 U.S.C. 6291, *et seq.;* ''EPCA'' or, in context, ''the Act'') sets forth a variety of provisions designed to improve energy efficiency. Part B of title III, which for editorial reasons was re-designated as Part A upon incorporation into the U.S. Code (42 U.S.C. 6291–

6309, as codified), establishes the ''Energy Conservation Program for Consumer Products Other Than Automobiles.'' These products include refrigerators, refrigerator-freezers, and freezers, which are among the subjects of this document. (42 U.S.C. 6292(a)(1)) This document also addresses coolers (*e.g.,* wine coolers) and combination cooler-refrigeration products (*i.e.,* products that include warm compartments such as wine storage compartments in products that otherwise perform the functions of refrigerators, refrigerator-freezers, or freezers). DOE is establishing coverage for these products as MREFs in this document.

EPCA specifies a list of covered consumer products that includes refrigerators, refrigerator-freezers, and freezers. Although EPCA did not define any of these products, it specified that the extent of DOE's coverage would apply to those refrigerator, refrigerator-freezers, and freezers that can be operated by alternating current (''AC'') electricity, but excluding those products that are designed to be used without doors, and, separately, those products that do not include a compressor and condenser unit as an integral part of the cabinet assembly. (42 U.S.C. 6292(a)(1)) EPCA did not preclude or otherwise foreclose the possibility that other consumer refrigeration products, such as those consumer refrigeration products addressed in this rulemaking, could also be covered separately if they satisfy certain prerequisites. EPCA, in fact, authorizes the Secretary of Energy to classify additional types of consumer products not otherwise specified in Part A as covered products. For a type of consumer product to be classified as a covered product, the Secretary must determine that:

(1) Classifying the product as a covered product is necessary for the purposes of EPCA; and

(2) the average annual per-household energy use by products of such type is likely to exceed 100 kilowatt-hours per year (''kWh/yr''). (42 U.S.C. 6292(b)(1)).

Before prescribing an energy conservation standard for products for which the Secretary has extended regulatory coverage through 42 U.S.C. 6292(b), the Secretary must determine that:

(1) The average household energy use of the products has exceeded 150 kWh per household for a 12-month period;

(2) the aggregate 12-month energy use of the products has exceeded 4.2 terawatt-hours (''TWh'');

(3) substantial improvement in energy efficiency is technologically feasible; and

(4) application of a labeling rule under 42 U.S.C. 6294 is unlikely to be sufficient to induce manufacturers to produce, and consumers and other persons to purchase, covered products of such type (or class) that achieve the maximum energy efficiency that is technologically feasible and economically justified.

Any standards that the Secretary sets for products that are covered in this manner must also meet the requirements of 42 U.S.C. 6295(o) and (p). See 42 U.S.C. 6295(l)(1).

For those products for which coverage has been established under EPCA, the energy conservation program consists essentially of four parts: (1) Testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers of covered products must use as the basis for (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) making representations about the efficiency of those products. Similarly, DOE must use these test procedures to determine whether the products comply with any relevant standards promulgated under EPCA.

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 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 conduct. (42 U.S.C. 6293(b)(3))

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))

EPCA further requires that any new or amended DOE test procedure for a covered product integrate measures of standby mode and off mode energy consumption into the overall energy efficiency, energy consumption, or other energy descriptor, unless the current test procedure already incorporates the standby mode and off mode energy consumption or such integration is technically infeasible. If an integrated test procedure is technically infeasible, DOE must prescribe a separate standby mode and off mode energy use test procedure for the covered product, if a separate test is technically feasible. (42 U.S.C. 6295(gg)(2)(A))

B. Current Rulemaking Process

On November 8, 2011, DOE published a notice of proposed determination of coverage (''NOPD'') to address the potential coverage of consumer refrigeration products without compressors in anticipation of a rulemaking to address these and related consumer refrigeration products. 76 FR 69147.

On February 23, 2012, DOE began a scoping process to set potential energy conservation standards and test procedures for wine chillers, consumer refrigeration products that operate without compressors, and consumer ice makers by publishing a notice of public meeting, and providing a framework document that addressed potential standards and test procedure rulemakings for these products. 77 FR 7547.

On October 31, 2013, DOE published in the **Federal Register** a supplemental notice of proposed determination of coverage (''2013 SNOPD'') in which it tentatively determined that MREFs, which at the time included wine chillers, non-compressor refrigeration products, hybrid products (*i.e.,* refrigeration products that combine a wine chiller with a refrigerator and/or freezer), and consumer ice makers, would likely satisfy the provisions of 42 U.S.C. 6292(b)(1). 78 FR 65223.

DOE published a notice of public meeting that also announced the availability of a preliminary technical support document (''TSD'') for MREFs on December 3, 2014 (''Preliminary Analysis''). 79 FR 71705. This Preliminary Analysis considered potential standards for those products DOE proposed to cover in its 2013 SNOPD. DOE held a public meeting to discuss and receive comments on the Preliminary Analysis, which covered the analytical framework, models, and tools that DOE used to evaluate potential standards; the results of preliminary analyses performed by DOE for these products; the potential energy conservation standard levels derived from these analyses that DOE had been considering consistent with its obligations under EPCA; and all other issues raised relevant to the development of energy conservation

standards for the different categories of MREFs.

DOE also published a test procedure NOPR on December 16, 2014 (''Test Procedure NOPR''), proposing definitions and test procedures for MREFs, including the product categories addressed in the 2013 SNOPD. See 79 FR 74894. The proposed test procedures, which would be included at title 10 of the CFR, part 430, subpart B, appendix A (''appendix A''), detailed how to measure MREF energy efficiency, energy use, and estimated annual operating cost during a representative average use period. In DOE's view, the procedure would, consistent with 42 U.S.C. 6293(b)(3), not be unduly burdensome to conduct.

After reviewing the comments received in response to both the Preliminary Analysis and the Test Procedure NOPR, DOE ultimately determined that its efforts at developing test procedures and potential energy conservation standards for these products would benefit from the direct and comprehensive input provided through the negotiated rulemaking process. On April 1, 2015, DOE published a notice of intent to establish a Working Group under the Appliance Standards and Rulemaking Federal Advisory Committee (''ASRAC'') that would use the negotiated rulemaking process to discuss and, if possible, reach consensus recommendations on the scope of coverage, definitions, test procedures, and energy conservation standards for MREFs. 80 FR 17355. Subsequently, DOE formed a Miscellaneous Refrigeration Products Working Group (''MREF Working Group'' or, in context, ''the Working Group'') to address these issues. The Working Group consisted of 15 members, including two members from ASRAC and one DOE representative. Table I.1 summarizes the MREF Working Group members. The MREF Working Group met in-person during six sets of meetings held in 2015 on May 4–5, June 11–12, July 15–16, August 11–12, September 16–17, and October 20.

TABLE I.1—MREF WORKING GROUP MEMBERS

Represented organization	Organization type	ASRAC member
Earthjustice	Efficiency Organization	No.
GE	Manufacturer	No.
AHAM	Trade Association	Yes.
Traulsen	Manufacturer	No.
Department of Energy	Government	No.
True Manufacturing	Manufacturer	Yes.
Southern California Edison	Utility	No.
U-Line Corporation	Manufacturer	No.
Appliance Standards Awareness Project	Efficiency Organization	No.
Whirlpool Corporation	Manufacturer	No.
Haier America	Manufacturer	No.
Mile High Equipment LLC	Manufacturer	No.
Scotsman Ice Systems	Manufacturer	No.
Hoshizaki America, Inc.	Manufacturer	No.
Sub-Zero Group, Inc.	Manufacturer	No.

On August 11, 2015, the MREF Working Group reached consensus on a term sheet that recommended the relevant scope of coverage, definitions, and test procedures for MREFs. See public docket EERE–2011–BT–STD–0043–0113 (''Term Sheet #1''). On October 20, 2015, the MREF Working Group reached consensus on a term sheet to recommend energy conservation standards for coolers and combination cooler refrigeration products. See public docket EERE–2011–BT–STD–0043–0111 (''Term Sheet #2''). ASRAC approved both term sheets during separate public meetings on December 18, 2015, and January 20, 2016, and sent them to the Secretary of Energy for further consideration. Although many of the MREF Working Group members commented on topics related to MREF coverage, definitions, and the test procedure in response to the Test Procedure NOPR, the Working Group members further discussed these concerns during the MREF Working Group meetings. As a result of these discussions, many Working Group members adjusted their positions from the comments initially submitted in response to the Test Procedure NOPR. Consequently, DOE's discussion in this document reflects the latest views of these Working Group members. These views are contained in summaries of the Working Group discussions and recommendations in the relevant sections of this document.

On March 4, 2016, DOE published a SNOPD proposing a scope of coverage and definitions for MREFs consistent with the recommendations of the MREF Working Group (''2016 SNOPD''). See 81 FR 11454. That document proposed that coolers and combination cooler refrigeration products would be considered covered products under EPCA, as well as definitions for these product categories and additional subcategories. DOE received comments in response to the 2016 SNOPD, but none that would alter its proposed determination; therefore, DOE is classifying MREFs as a covered product in this final rule. Specific comments received in response to the 2016 SNOPD are discussed in the relevant sections of this document.

II. Summary of the Final Rule

DOE has determined that MREFs, the definition of which DOE is adding to 10 CFR 430.2 and discusses in this notice, meet the statutory requirements under 42 U.S.C. 6292(b)(1), and is classifying them as a covered product. DOE has also determined that MREFs satisfy at least two of the four criteria required under EPCA in order for the Secretary to set standards for a product whose coverage is added pursuant to 42 U.S.C. 6292(b). DOE will determine if MREFs satisfy the other two provisions of 42 U.S.C. 6295(l)(1) during the course of the energy conservation standards rulemaking.[1]

In addition to establishing coverage over MREFs and determining that these products satisfy the necessary criteria under 42 U.S.C. 6295(l) for DOE to set energy conservation standards for them,

[1] On *www.regulations.gov*, see docket ID EERE–2011–BT–STD–0043 for information regarding the energy conservation standards rulemaking.

this rule establishes test procedures for MREFs and establishes or clarifies a number of definitions necessary to identify and distinguish MREFs from other currently covered products. MREFs include coolers (*e.g.,* wine chillers) and combination cooler refrigeration products (*i.e.,* products that include at least one warm-temperature compartment combined with a fresh food and/or freezer compartment). Although the 2013 SNOPD and the Test Procedure NOPR proposed coverage and testing provisions, respectively, for non-compressor refrigerators and ice makers, this final rule does not establish coverage or test procedures for these products.

With respect to the definitions addressed in this document, DOE is finalizing a series of definitions for consumer refrigeration products generally consistent with those proposed in the 2016 SNOPD. Accordingly, this final rule establishes or revises definitions for a variety of terms to help ensure their compatibility with the changes introduced by the coverage of MREFs and to clarify their application to MREFs and other currently regulated refrigeration products (*i.e.,* refrigerators, refrigerator-freezers, and freezers). This final rule also moves the ''all-refrigerator'' definition from its current location in appendix A to 10 CFR 430.2, establishes a definition for ''cooler-all-refrigerator'' in 10 CFR 430.2, establishes a definition for ''cooler compartment'' in appendix A, and revises the existing ''special compartment'' definition in appendix A.

This final rule also establishes test procedures for coolers that address testing set-up, temperature control adjustment, volume measurements, energy use measurements, and calculations. These test procedures are similar to the test procedures in appendix A for refrigerators, but apply a different compartment standardized temperature (55 degrees Fahrenheit (°F) instead of 39 °F for refrigerators) and usage adjustment factor (0.55 instead of 1.0 for refrigerators). These differences reflect the different consumer use for coolers as compared to refrigerators.

Additionally, this final rule also establishes test procedures for combination cooler refrigeration products that take effect on the compliance date of any energy conservation standards established for combination cooler refrigeration products. Until that date, combination cooler refrigeration products are required to comply with the existing refrigerator, refrigerator-freezer, and freezer energy conservation standards based on testing according to the relevant test procedure waivers. The test procedures established in this final rule include temperature settings, volume measurements and calculations, and measuring and calculating energy use for these products. Similar to the test procedures established for coolers, cooler compartments within combination cooler refrigeration products are tested to a standardized compartment temperature of 55 °F with a usage adjustment factor of 0.55.

In addition, DOE is establishing a new section, 10 CFR 430.23(dd), to include the test procedures for coolers and combination cooler refrigeration products. All of the detailed provisions for testing these products are incorporated in appendix A. Although coolers and combination cooler refrigeration products are covered separately from refrigerators and refrigerator-freezers, there are many similarities among these products that warrant similar test methods. Therefore, DOE is amending appendix A to incorporate testing provisions for coolers and combination cooler refrigeration products rather than establishing a separate appendix for them. However, as described in the previous paragraph, the testing provisions for combination cooler refrigeration products do not take effect until the compliance date of MREF energy conservation standards.

Test methods for freezers continue to be found at 10 CFR part 430, appendix B (''appendix B''), which DOE is not amending for testing MREFs. However, DOE is amending appendix B to incorporate additional clarifications to the test procedure consistent with the changes being made to appendix A in this final rule.

The amendments to appendix A established in this final rule primarily reflect the proposals from the Test Procedure NOPR. However, DOE has revised parts of the Test Procedure NOPR proposal based on feedback from the MREF Working Group.[2] The MREF Working Group recommended test procedures are found in Term Sheet #1 (see p. 2).

In addition to the specific MREF test procedures in this final rule, DOE is also amending the test procedures to: (1) Address minor technical corrections needed in appendices A and B; (2) improve testing clarity; (3) incorporate volume measurement guidance; (4) remove provisions for externally-vented products; (5) introduce rounding requirements; and (6) remove the previous (and obsolete) test procedures found at 10 CFR part 430, subpart B, appendix A1 and appendix B1.

When amending a test procedure, DOE typically determines the extent to which its proposal would alter the measured energy efficiency of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1)) DOE notes that DOE has not yet established energy conservation standards for the products that are the focus of this rule (*i.e.,* coolers and combination cooler refrigeration products). Hence, there would be no change in measured energy efficiency by an amendment to a test procedure. For currently covered consumer refrigeration products (refrigerators, refrigerator-freezers, and freezers), the clarifying amendments to appendices A and B established in this final rule would not result in a change in measured energy use compared to the existing test procedures.

DOE notes that certain combination cooler refrigeration products, according to the definitions established in this rule, are currently certified for compliance with the existing refrigerator, refrigerator-freezer, and freezer energy conservation standards based on testing according to test procedure waivers.[3] To ensure that these products continue to satisfy a minimum level of energy efficiency, these products would continue to be treated as refrigerators, refrigerator-freezers, or freezers (as applicable) until the compliance date of energy conservation standards established for MREFs. On that date, these products would no longer be within the scope of the definitions of refrigerators, refrigerator-freezers, or freezers, and would only be subject to the relevant MREF test procedures and standards. Accordingly, they would no longer be required to comply with the existing refrigerator, refrigerator-freezer, or freezer regulations, and any granted waivers or interim waivers would no longer apply.

For coolers, manufacturers may, on a voluntary basis, make representations of energy use starting on August 17, 2016 according to the provisions in appendix A established in this final rule. For combination cooler refrigeration products, manufacturers must use the test procedures in appendix A for all representations of energy use on or after the compliance date of any energy conservation standards for these

[2] See, for example, the intermediate drafts at documents 59 and 68 in docket ID EERE–2011–BT–STD–0043 on *www.regulations.gov.*

[3] See, for example, the interim waiver granted to Panasonic Appliances Refrigeration Systems Corporation of America (PAPRSA) on January 26, 2016. 81 FR 4270.

products. For all other miscellaneous refrigeration products (*e.g.,* coolers), manufacturers must use the test procedures in appendix A for all representations of energy use on or after January 17, 2017.

Table II.1 describes the amendments proposed in the Test Procedure NOPR and the final amendments established in this final rule.

TABLE II.1—SUMMARY OF PROPOSED CHANGES AND AFFECTED SECTIONS OF 10 CFR

Affected sections	NOPR proposal	Final rule action
	Part 429	
§ 429.14	Revise section header, clarify volume determinations, introduce rounding requirements, clarify product category determinations.	Finalized as proposed with additional clarifications, except product category determination would be based on operation in a 90 °F ambient temperature.
§ 429.61	Establish sampling plan, certification report requirements, rounding requirements, and product category determinations for MREFs.	Finalized sampling plan, certification report, and rounding requirements with additional clarifications; revised product category determination based on operation in a 90 °F ambient temperature.
§ 429.72	Allow for use of computer-aided design models to determine MREF volumes.	Finalized as proposed.
§ 429.134	Update refrigerator, refrigerator-freezer, and freezer provisions to include rounding requirements; establish enforcement provisions for MREFs.	Finalized as proposed.
	Part 430	
§ 430.2	Establish product definitions for MREFs and amend existing refrigerator, refrigerator-freezer, and freezer definitions for similar structure.	Finalized as proposed with updates to definitions and coverage as recommended by the MREF Working Group; clarified timing between refrigerator, refrigerator-freezer, and freezer and combination cooler refrigeration product definitions (formerly hybrid refrigeration products).
§ 430.3	Remove reference to outdated industry standard	Finalized as proposed.
§ 430.23	Modify test procedures sections to address the amendments to the refrigerator, refrigerator-freezer, and freezer appendices; insert new section to address MREFs and clarify application of appendices to products without vapor-compression refrigeration systems.	Finalized as proposed for sections (a) and (b); section (dd) finalized as proposed with updates to reflect revised scope of coverage.
	Part 430, Subpart B, Appendix A	
1. Definitions	Include ''cellar compartment'' definition	Updated to ''cooler compartment'' and incorporated MREF Working Group feedback.
	Establish definition for ''compartment''	Excluded from final amendments.
	Add ''multiple refrigeration system product'' definition	Finalized as proposed.
	No specific proposal	Added clarification to ''special compartment'' definition per feedback from the MREF Working Group and related recommendation.
2. Test Conditions	Establish test conditions for MREFs consistent with existing refrigerator and refrigerator-freezer requirements, except for testing in a 72 °F ambient for non-compressor coolers.	Finalized as proposed except that all ambient temperatures for testing shall be 90 °F.
3. Test Control Settings.	Add a standardized cooler compartment temperature of 55 °F and otherwise follow existing control settings requirements.	Finalized as proposed.
4. Test Period	No proposal	Inserted missing Figure 1 and updated language to general compartment references (to include cooler compartments).
5. Test Measurements	Measure temperatures for MREFs consistent with existing appendix A requirements.	Finalized as proposed.
	Establish usage factors of 0.55 for vapor-compression coolers, 1.2 for non-compressor coolers, 0.85 for combination cooler refrigeration products.	Established 0.55 usage factor for all MREFs.
	Incorporate MREFs into existing requirements	Finalized as proposed.
6. Calculations	Include volume adjustment factor of 0.69 for cooler compartments in combination cooler refrigeration products.	Volume adjustment factor of 1.0 for all cooler compartments.
	Incorporate MREFs into existing calculations based on 55 °F standardized cooler compartment temperature.	Finalized as proposed.
	Remove provisions for externally-vented products	Finalized as proposed.
	Part 430, Subpart B, Appendices A and B	
1. Definitions	Eliminate definition numbering	Finalized as proposed.
2. Test Conditions	Clarify movable subdividing barrier positions	Finalized as proposed.

TABLE II.1—SUMMARY OF PROPOSED CHANGES AND AFFECTED SECTIONS OF 10 CFR—Continued

Affected sections	NOPR proposal	Final rule action
3. Test Control Settings.	Use extrapolation approach for compartments unable to maintain standardized temperatures.	No energy use rating for models unable to maintain standardized temperatures (would require a manufacturer to seek and justify an application for a test procedure waiver).
5. Test Measurements	Clarify temperature measurement requirements	Finalized as proposed.
	Incorporate volume measurement guidance	Finalized as proposed.
5 and 6	Include volume rounding requirements	Finalized as proposed, with note that rounding is not required for refrigerators, refrigerator-freezers, and freezers until the compliance date of any amended energy conservation standards for those products.
6. Calculations	Refer to different temperature setting tests as ''tests'' rather than ''test periods''.	Finalized as proposed.
7. Test Procedure Waivers.	Revise text to general terms that would include MREFs	Finalized as proposed.
Part 430, Subpart B, Appendices A1 and B1		
	Remove obsolete appendices	Finalized as proposed.

III. Scope of Coverage

In response to the feedback received from interested parties on the Preliminary Analysis and Test Procedure NOPR, the MREF Working Group was tasked with recommending a scope of coverage for MREFs. To this end, the Working Group's Term Sheet #1 recommended that DOE not include two product categories for which it had proposed coverage in the 2013 SNOPD (and for which DOE proposed test procedures in the Test Procedure NOPR): Non-compressor refrigerators and icemakers. See Term Sheet #1.

DOE proposed in the 2016 SNOPD that MREF coverage would apply only to coolers and combination cooler refrigeration products, consistent with the MREF Working Group recommendation, and proposed definitions for these product categories. DOE agreed with Working Group members that consumer ice makers are significantly different from the other product categories considered for coverage under MREFs, and, therefore, proposed to exclude them from MREF coverage. Additionally, DOE did not propose a separate product category for non-compressor refrigerators because it was not aware of any such products available on the market. See 81 FR 11454, 11456.

The Appliance Standards Awareness Project (''ASAP'') and Earthjustice (jointly referred to as ''Joint Commenters''); Pacific Gas and Electric Company (''PG&E''), Southern California Gas Company (''SCGC''), Southern California Edison (''SCE''), and San Diego Gas and Electric Company (''SDG&E'') (jointly referred to as the ''California Investor-Owned Utilities (IOUs)''); and the Association of Home Appliance Manufacturers (''AHAM'') agreed with DOE's proposed scope of coverage for MREFs, which included coolers and combination cooler refrigeration products, but excluded ice makers. (Joint Commenters, No. 23 at p. 1; California IOUs, No. 25 at p. 1; AHAM, No. 24 at p. 2) [4]

Because interested parties supported the 2016 SNOPD's proposed scope of coverage, DOE is establishing that MREFs be defined as consumer refrigeration products other than refrigerators, refrigerator-freezers, or freezers, and which include coolers and combination cooler refrigeration products, as discussed further in this document.

IV. Evaluation of Miscellaneous Refrigeration Products as Covered Products

In order for MREFs to be classified as a covered product, they are required to satisfy certain statutory criteria. As stated earlier in this notice, DOE may classify a consumer product as a covered product if (1) classifying products of such type as covered products is necessary and appropriate to carry out the purposes of EPCA; and (2) the average annual per household energy use by products of such type is likely to exceed 100 kWh (or its Btu equivalent) per year. (42 U.S.C. 6292(b)(1))

[4] A notation in the form ''Joint Commenters, No. 23 at p. 1'' identifies a written comment: (1) Made by the Joint Commenters; (2) recorded in document number 23 that is filed in the coverage determination docket (Docket No. EERE–2011–BT–DET–0072) and available for review at *www.regulations.gov*; and (3) which appears on page 1 of document number 23.

A. Coverage Necessary or Appropriate To Carry Out Purposes of EPCA

In this document, DOE has determined that the coverage of MREFs is both necessary and appropriate to carry out the purposes of EPCA. MREFs, which comprise a small but significant and growing sector of the consumer refrigeration market, consume energy generated from limited energy supplies and regulating their energy efficiency would be likely to help conserve these limited energy supplies. As a coverage determination is a prerequisite to establishing standards for these products, classifying MREFs as a covered product is clearly necessary and appropriate to carry out EPCA's purposes to: (1) Conserve energy supplies through energy conservation programs; and (2) provide for improved energy efficiency of major appliances and certain other consumer products. (42 U.S.C. 6201)

B. Energy Use Estimates

In the 2016 SNOPD, DOE estimated the average household energy use for MREFs—coolers and combination cooler refrigeration products. Because these products were included in the proposed definition of ''miscellaneous refrigeration products,'' their estimated average household energy use provides a conservative estimate of whether the average annual per-household energy use of MREFs exceeds 100 kWh/yr, as required for coverage under EPCA. DOE presented these results and a detailed discussion of the methodology used for the analysis in Section IV.B of the 2016 SNOPD. 81 FR at 11456–11457.

1. Coolers

DOE used market data, engineering models, and manufacturer feedback

received under non-disclosure agreements and during the MREF Working Group meetings to estimate average household energy use for coolers. In the 2016 SNOPD, DOE organized the analysis for consistency with the scope of coverage and product definitions recommended by the MREF Working Group. The cooler definition proposed in the 2016 SNOPD would incorporate products, regardless of refrigeration system, under the same definition. Additionally, DOE proposed four product categories within the cooler definition based on refrigerated volume and installation configuration. The analysis conducted for the 2016 SNOPD separated coolers into these four product categories. 81 FR at 11456–11457.

Table IV.1 shows the estimated annual energy use for each category of cooler analyzed in the 2016 SNOPD. DOE found that across all cooler categories, coolers have an average lifetime of over 10 years and an average annual energy consumption of 440 kWh per household. *Id.*

TABLE IV.1—2016 SNOPD COOLERS ESTIMATED ANNUAL ENERGY USE

	Units	Product type				Totals or averages
		Compact FS *	Compact BI *	FS *	BI *	
Average Energy Consumption (per unit).	kWh/yr	450	250	370	340	440
Stock	Units, 2014	14,500,000	55,000	610,000	120,000	15,300,000
National Energy Consumption	TWh/yr	6.5	0.014	0.23	0.042	6.8
Average Lifetime	Years	10.3	10.3	17.4	17.4	10.6
Annual Sales	Units, 2014	1,400,000	5,400	35,000	7,100	1,460,000
Saturation	%	12.6	0.05	0.5	0.1	

* FS = Freestanding, BI = Built-in.

DOE received no comments on the methodology or analysis used in the 2016 SNOPD to estimate cooler energy use. Therefore, DOE has maintained the cooler analysis as presented in the 2016 SNOPD and in Table IV.1 for this final determination.

2. Combination Cooler Refrigeration Products

DOE used market data, engineering models, and manufacturer feedback received under non-disclosure agreements and during the MREF Working Group meetings to estimate average household energy use for combination cooler refrigeration products. Similar to the updated coolers analysis, DOE revised its combination cooler refrigeration product analysis in the 2016 SNOPD to be consistent with the scope of coverage and product definitions recommended by the MREF Working Group. For example, the definition of combination cooler refrigeration product proposed in the 2016 SNOPD removed the 50-percent cooler compartment volume requirement originally proposed in the 2013 SNOPD. DOE also updated its estimates of annual shipments, product lifetimes, and energy consumption per unit for these products based on manufacturer feedback, recommendations from the MREF Working Group, and more recent product information. 81 FR at 11457.

Table IV.2 shows the estimated annual energy use for each category of combination cooler refrigeration product analyzed in the 2016 SNOPD. DOE found that across all categories, combination cooler refrigeration products have an average lifetime of 12.6 years and an average annual energy consumption of 222 kWh per household. *Id.*

TABLE IV.2—2016 SNOPD COMBINATION COOLER REFRIGERATION PRODUCTS ANNUAL ENERGY USE

	Units	Product type *				Totals or averages
		C3A–BI	C9–BI	C13A	C13A–BI	
Average Energy Consumption (per unit).	kWh/yr	210	280	210	220	220
Stock	Units, 2014	70,000	70,000	160,000	120,000	430,000
National Energy Consumption	TWh/yr	0.015	0.019	0.035	0.027	0.095
Average Lifetime	Years	17.4	17.4	10.3	10.3	12.6
Annual Sales	Units, 2014	4,000	4,000	16,000	12,000	36,000
Saturation		0.06%	0.06%	0.14%	0.11%	

* Product types for combination cooler refrigeration products are based on the product class of refrigerator, refrigerator-freezer, or freezer that the product would be categorized under if it did not have a cooler compartment.

DOE received no comments on the methodology or analysis used in the 2016 SNOPD to estimate combination cooler refrigeration product energy use. Therefore, DOE has maintained the combination cooler refrigeration product analysis as presented in the 2016 SNOPD and in Table IV.2 for this final determination.

3. Conclusions

Based on the evaluations summarized in Tables IV.1 and IV.2, the MREF categories examined by DOE consume significantly more than 100 kWh annually, which led DOE to tentatively determine in the 2016 SNOPD that these products would satisfy the average annual per household energy use threshold set by EPCA to classify a product as covered. 81 FR at 11457.

In response to the 2016 SNOPD, the Joint Commenters and California IOUs agreed with DOE's tentative determination that MREFs satisfy the energy consumption criteria for coverage under EPCA. (Joint Commenters, No. 23 at p. 1; California IOUs, No. 25 at p. 2) DOE received no

comments challenging its tentative determination.

Based upon its evaluations of coolers and combination cooler refrigeration products, which DOE has not changed since the 2016 SNOPD analysis, DOE has determined that these products, on average, are likely to exceed the 100 kWh/yr threshold set by EPCA to classify a product as covered. Moreover, DOE has determined that MREFs, on average, consume more than 150 kWh/yr, and that the aggregate annual national energy use of these products exceeds 4.2 TWh. Accordingly, these data indicate that MREFs satisfy at least two of the four criteria required under EPCA in order for the Secretary to set standards for a product whose coverage is added pursuant to 42 U.S.C. 6292(b). See 42 U.S.C. 6295(l)(1)(A)–(D).

V. Product Definitions

Consistent with the scope of coverage outlined in the 2013 SNOPD, the Test Procedure NOPR proposed definitions for the following four product categories that DOE indicated would be considered as MREFs: Cooled cabinets, non-compressor refrigerators, hybrid refrigerators, and ice makers. See 79 FR at 74899–74904.

The MREF Working Group subsequently discussed how and whether to define the various terms related to MREFs. The Working Group ultimately reached a consensus that is reflected in Term Sheet #1's recommendations, which included dropping DOE's proposed definitions for non-compressor refrigerators and ice makers, updating the terms used to describe the covered MREF product categories based on the discussions and analyses conducted during the Working Group meetings, revising the proposed MREF product definitions, and amending the existing definitions for refrigerators, refrigerator-freezers, and freezers to ensure consistency with the recommended MREF definitions. See Term Sheet #1.

Consistent with these recommendations, the 2016 SNOPD contained proposals for new and amended definitions that would be added to 10 CFR 430.2. DOE proposed new definitions to clearly delineate which products would fall within the MREF scope of coverage and to define the individual product categories comprising MREFs. DOE also proposed similar conforming amendments to the existing definitions for refrigerators, refrigerator-freezers, and freezers for consistency with the proposed MREF definitions. The proposed amendments were intended to eliminate confusion with the proposed MREF definitions, and would not affect the scope of coverage under the existing refrigerator, refrigerator-freezer, and freezer definitions, other than for those products that would fall under the combination cooler refrigeration products category. The proposed definitions generally followed the MREF Working Group recommendations with minor revisions to improve clarity. 81 FR at 11457–11461.

In response to the 2016 SNOPD, the Joint Commenters supported the proposed product definitions. (Joint Commenters, No. 23 at pp. 1–2) The California IOUs also stated that DOE should adopt the definitions from Term Sheet #1 to clearly delineate MREF products from those that are already considered covered products. (California IOUs, No. 25 at p. 2) Industry representatives raised specific concerns regarding particular aspects of the various definitions that DOE proposed. Those specific concerns are addressed in the sections that follow.

As described in section III of this notice, DOE is maintaining the scope of coverage for MREFs as proposed in the 2016 SNOPD. Therefore, DOE is establishing definitions for the same terms as proposed in the 2016 SNOPD. The following sections describe each of the new or amended definitions.

A. Coolers

In the 2016 SNOPD, DOE proposed to define the term ''cooler'' using the definition for ''cooled cabinet'' proposed in the Test Procedure NOPR as a starting point and updated to reflect the Working Group's recommendations (see Term Sheet #1). DOE proposed to define a ''cooler'' as a cabinet, used with one or more doors, that has a source of refrigeration capable of operating on single-phase, alternating current and is capable of maintaining compartment temperatures either no lower than 39 °F, or in a range that extends no lower than 37 °F but at least as high as 60 °F. The proposal also clarified that these compartment temperatures would be determined in a 90 °F ambient temperature. 81 FR at 11458–11459.

The California IOUs supported a definition for coolers that would not differentiate compressor-based coolers from non-compressor coolers. (California IOUs, No. 25 at p. 2)

AHAM commented that DOE should retain the language excluding products ''designed to be used without doors'' in the regulatory text, consistent with the wording included in the statutory language in 42 U.S.C. 6292(a)(1) and agreed upon by the MREF Working Group. (AHAM, No. 24 at pp. 3–4)

DOE notes that the term sheet expressly indicated that the definitions were in draft form and would be subject to further revision and modification. See Term Sheet #1, Appendix 2. This provision, which was presented in the beginning of the appendix in boldfaced-type, indicated that some modifications to these definitions were possible to enable DOE to ensure the clarity and consistency of its regulations.

In DOE's view, the proposed revisions to the Working Group's text would more clearly define the contours of what a ''cooler'' is. Specifically, by including the phrase ''used with one or more doors,'' the definition states that a product must have at least one door in order to fall into the category. This phrasing, in addition to being clearer and more direct, accomplishes the same purpose as the language referenced by AHAM. Additionally, the revised text does not require a subjective determination as to the intent of a product's design. If a product is used with one or more doors, it would be considered a cooler regardless of the design intent. Therefore, DOE is maintaining the language of ''used with one or more doors'' in the cooler definition as well as the combination cooler refrigeration product category definitions established in this final rule.

AHAM also expressed concern that the proposed definitions state that compartment temperatures would be ''as determined according to the provisions in § 429.61(d)(2) [proposed at 79 FR 74894 (December 16, 2014)],'' which included a 72 °F ambient temperature for determining compartment temperatures. AHAM commented that DOE likely did not intend to suggest that it will finalize a rule that includes a 72 °F ambient temperature and that, instead, DOE plans to finalize a rule that will include a 90 °F ambient temperature in § 429.61(d)(2). AHAM stated that its support of the definitions containing that reference is contingent on that assumption, as it would strongly object to a 72 °F ambient temperature. (AHAM, No. 24 at p. 3) As noted in the Preamble of the 2016 SNOPD, DOE agreed with the MREF Working Group recommendation that compartment temperatures be determined in a 90 °F ambient temperature. 81 FR 11454, 11458. The requirements in § 429.61(d)(2) reference the MREF test procedure temperature measurements. In this final rule, DOE is establishing that compartment temperatures are determined in the test procedure in a 90 °F ambient temperature. Therefore, the definitions with references to § 429.61(d)(2) refer to operation in a 90

°F ambient temperature, as AHAM supported.

Liebherr Canada Ltd. (''Liebherr'') stated that it manufactures a humidor product for storing cigars that operates at storage temperatures between 61 °F and 68 °F, and that the product was designed exclusively for the storage of tobacco products in an optimal humidity condition. Although the proposed cooler definition did not refer to the storage of wine and other beverages, Liebherr noted that this phrase was included in the cooler compartment definition in Term Sheet #1. Liebherr commented that products such as its humidor should be excluded from coverage because they are not intended for cooling food or beverages and because they cannot maintain a 55 °F storage temperature. Liebherr suggested DOE implement a revised cooler definition that would require the product to be capable of maintaining a 55 °F storage temperature, noting that this requirement would not exclude any of the beverage center or wine cooler appliances as customers would not accept beverages as warm as or warmer than 55 °F. Additionally, Liebherr stated that including products that cannot reach 55 °F storage temperature would create excessive burden, as manufacturers would be required to obtain test procedure waivers for those products. (Liebherr, No. 21 at pp. 2–3)

In the 2016 SNOPD, DOE proposed a cooler definition that did not include the requirement that the product be designed for the storage of wine and other beverages to limit potential circumvention. By relying on quantifiable characteristics, such as compartment temperature, the proposed definition would allow a third-party to verify a product's appropriate classification without knowledge of the manufacturer's design intent. For that reason, DOE is not including reference to the storage of food or beverages in the cooler definition established in this final rule.

DOE also considered including the requirement that a product be able to maintain a 55 °F storage temperature in its cooler definition. However, as described in the Preliminary Analysis, DOE is aware of many products marketed for the storage of food and beverages that are not able to maintain 55 °F compartment temperatures when tested in a 90 °F ambient temperature. See chapter 3 of the preliminary TSD. Accordingly, including a 55 °F compartment temperature requirement in the cooler definition would exclude such products from being considered coolers subject to test procedures or any subsequent energy conservation standards. To avoid excluding these products from coverage, DOE is not including a 55 °F compartment temperature requirement in the cooler definition. Because humidors such as the one identified in the Liebherr comment meet the definition for cooler, they would be subject to DOE's cooler test procedures and any energy conservation standards for coolers. For products that cannot maintain the standardized compartment temperatures required in the test procedure, manufacturers would have to apply for test procedure waivers according to 10 CFR 430.27 to establish an acceptable test procedure for each such product.

For the reasons explained above, DOE is adopting, without modifications, the definition of ''cooler'' proposed in the 2016 SNOPD.

The 2016 SNOPD also contained a proposal to provide additional definitions for four subcategories within the cooler definition based on refrigerated volume and configuration, consistent with the same requirements and definitions currently in place for refrigerators, refrigerator-freezers, and freezers. DOE proposed four categories of coolers: Freestanding coolers, freestanding compact coolers, built-in coolers, and built-in compact coolers. 81 FR at 11459. DOE did not receive any comments opposing these proposed cooler product categories proposed in 2016 SNOPD. Therefore, DOE is adopting its proposed definitions for these four product categories.

B. Combination Cooler Refrigeration Products

In the 2016 SNOPD, DOE proposed to define terms for combination cooler refrigeration products consistent with the MREF Working Group recommendations in Term Sheet #1, including ''cooler-refrigerator,'' ''cooler-refrigerator-freezer,'' and ''cooler-freezer.'' The proposed definitions addressed products that combine warm-temperature compartments, referred to as cooler compartments, with a fresh food and/or freezer compartment. Additionally, the proposed definitions did not require that the cooler compartment make up at least 50 percent of the product's total refrigerated volume, as initially proposed in the definition for ''hybrid refrigeration product'' in the Test Procedure NOPR. Similar to the cooler definitions proposed in the 2016 SNOPD, the proposed combination cooler refrigeration product definitions included the requirements that the products be used with one or more doors, operate using single-phase, alternating current electric energy input, and maintain compartment temperatures as determined in a 90 °F ambient temperature. 81 FR at 11459.

The California IOUs supported the adoption of combination cooler refrigeration product definitions that would not exclude non-compressor products from coverage. (California IOUs, No. 25 at p. 2) Consistent with its proposal, DOE's definitions for combination cooler refrigeration products do not exclude non-compressor products.

Similar to the discussion for coolers in section V.A of this rulemaking, AHAM questioned DOE's proposal to include language in each of the combination cooler refrigeration product definitions specifying the use of one or more doors as well as the proposal that compartment temperatures be determined according to § 429.61(d)(2). (AHAM, No. 24 at pp. 3–4) For the reasons discussed in section V.A of this rulemaking, DOE is adopting the phrase ''used with one or more doors'' for each of the combination cooler refrigeration product definitions, as proposed in the 2016 SNOPD, and is establishing in this final rule that the provisions in § 429.61(d)(2) refer to testing in a 90 °F ambient temperature.

Additionally, AHAM and Sub Zero Group, Inc. (''Sub Zero'') separately objected to DOE's proposal to remove references to 8 °F that were contained in the definitions for cooler-refrigerator and cooler-refrigerator-freezer. (AHAM, No. 24 at pp. 2–3; Sub Zero, No. 22 at pp. 1–2) DOE proposed definitions for combination cooler refrigeration products that were consistent with the definitions proposed for the non-MREF product types (refrigerators, refrigerator-freezers, and freezers), but with the requirement that they include a cooler compartment. As discussed elsewhere in this document, DOE determined that the proposed temperature updates in the refrigerator and refrigerator-freezer definitions are not necessary to differentiate the existing product definitions from the new MREF definitions. Therefore, DOE is revising its 2016 SNOPD proposal and establishing the original reference to 8 °F in the definitions for refrigerator and refrigerator-freezer. For consistency, DOE is also establishing 8 °F as the reference temperature in the definitions for cooler-refrigerator and cooler-refrigerator-freezer.

AHAM also noted that the 2016 SNOPD did not consistently revise the Celsius temperature references associated with the proposed change from 8 °F to 0 °F. (AHAM, No. 24 at p. 3) DOE has revised the definitions proposed in the 2016 SNOPD as

described in the previous paragraph, and has incorporated the correct Celsius temperature references in this final rule.

As discussed in section V.C of this document, DOE is amending the relevant refrigerator definitions to exclude products that operate within the temperature ranges used to define coolers. This revision would avoid the possibility that a product could be considered both a cooler and a refrigerator. The relevant combination cooler refrigeration product definitions use similar language in describing the non-cooler compartments which will help avoid potential overlapping definitions.

Other than these temperature-related changes, DOE is establishing the cooler-refrigerator, cooler-refrigerator-freezer, and cooler-freezer definitions as proposed in the 2016 SNOPD.

As discussed in the 2016 SNOPD, DOE refers to the term ''cooler compartment'' but offered no definition for this term, indicating instead that this term would be defined through the separate MREF test procedure rulemaking. See 81 FR at 11457–11459. Additionally, AHAM commented that the MREF Working Group also defined the terms ''cooler-all-refrigerator'' and ''all-refrigerator'' in Term Sheet #1, but that these definitions were not present in the 2016 SNOPD. AHAM recommended that these definitions be included in the test procedure final rule. (AHAM, No. 24 at p. 4)

DOE proposed in the Test Procedure NOPR to move the definition for ''all-refrigerator'' from appendix A to 10 CFR 430.2. 79 FR at 74901. The MREF Working Group supported this proposal, and DOE is incorporating this change in this final rule. DOE is similarly establishing a definition for ''cooler-all-refrigerator'' in 10 CFR 430.2, consistent with the MREF Working Group recommendation.

DOE did not propose in the 2016 SNOPD definitions that would be included in appendix A. In this final rule, DOE is establishing a definition for ''cooler compartment'' (instead of the term ''cellar compartment'' as used in the Test Procedure NOPR) in appendix A as a refrigerated compartment designed exclusively for wine or other beverages within a consumer refrigeration product that is capable of maintaining compartment temperatures either (a) no lower than 39 °F (3.9 °C), or (b) in a range that extends no lower than 37 °F (2.8 °C) but at least as high as 60 °F (15.6 °C). The temperature ranges in this definition are consistent with the Test Procedure NOPR proposal and the temperature ranges used to define coolers, as discussed in section V.A of this document. Consistent with the other definitions established in this document, DOE is establishing that the compartment temperature ranges be determined in a 90 °F ambient temperature. Additionally, the inclusion of an explanation that a cooler compartment is designed exclusively for wine or other beverages clarifies the differences between a cooler compartment and a special compartment. DOE is similarly amending the definition of ''special compartment'' in appendix A to exclude cooler compartments, consistent with the MREF Working Group's recommendation.

C. Refrigerators, Refrigerator Freezers, and Freezers

In the 2016 SNOPD, DOE proposed several changes to the existing definitions for ''refrigerator,'' ''refrigerator-freezer,'' and ''freezer'' to establish a similar structure with the proposed MREF definitions, improve their clarity, and eliminate potential overlap among these definitions.[5] DOE did not propose to redefine the scope of coverage for these products or to amend the definitions in a manner that would affect how a currently covered product would be classified (other than to treat combination cooler refrigeration products as MREFs). The proposals were consistent with the MREF Working Group recommendations except for the changes described earlier (*i.e.,* revising references to 8 °F to 0 °F for freezer compartment temperatures and inclusion of ''used with one or more doors'' language). DOE also proposed to eliminate the redundant terms ''electric refrigerator'' and ''electric refrigerator-freezer'' from 10 CFR 430.2. 81 FR at 11459–11460.

As it did in its comments on DOE's proposed ''cooler'' definition, see supra section V.A, AHAM questioned DOE's use of language in the definition that would specify that products falling into one of the refrigeration product categories be those products that are equipped with one or more doors. AHAM also questioned the proposal's inclusion of a requirement that compartment temperatures be determined according to § 429.61(d)(2). (AHAM, No. 24 at pp. 3–4) For the reasons discussed in section V.A of this document, DOE is adopting the phrase ''used with one or more doors'' for each of the existing refrigeration product definitions, as proposed in the 2016 SNOPD, and is establishing that § 429.61(d)(2) refers to testing in a 90 °F ambient temperature.

Also as noted in section V.B of this document, AHAM and Sub Zero opposed DOE's proposal to remove references to 8 °F in the definitions for cooler-refrigerator, cooler-refrigerator-freezer, refrigerator, and refrigerator-freezer. They noted that this change was not consistent with the MREF Working Group's recommendation of amending the refrigerator, refrigerator-freezer, and freezer definitions only as necessary to clarify the differentiation with new MREF definitions. AHAM and Sub Zero stated that the proposed definition would alter the scope of coverage for those products, noting that the existing definition requires that a compartment be capable of maintaining temperatures below 8 °F and may be adjusted to 0 °F. Specifically, AHAM commented that the proposed definition could create a situation where products that are now considered refrigerator-freezers could change to refrigerators, or that some products (depending on defrost type) may no longer have an applicable product class and would require waivers. (AHAM, No. 24 at pp. 2–3; Sub Zero, No. 22 at pp. 1–2)

DOE proposed the revised temperature structure to align the proposed definitions with the test procedure to limit the possibility of a product meeting the definition requirements but not being able to be tested. However, DOE acknowledges that this revision is not directly related to improving clarity or establishing consistency with respect to the new MREF product definitions. Accordingly, DOE determined that this potential issue would be more appropriately addressed during a rulemaking specific to refrigerators, refrigerator-freezers, and freezers. Therefore, DOE is establishing references to 8 °F for the freezer compartment temperature requirements in the definitions for refrigerators and refrigerator-freezers, and in the associated combination cooler refrigeration product definitions.

DOE is, however, establishing an additional amendment to the existing definitions for refrigerators, refrigerator-freezers, and freezers. The temperature ranges used to define coolers overlap with those used to define refrigerators, which may lead to uncertainty regarding appropriate product classification (*i.e.,* products with compartments capable of maintaining temperatures between 37 °F and 39 °F and as high as 60 °F would meet both the cooler and existing refrigerator definitions). As originally discussed in the Test Procedure NOPR, DOE observed that products with

[5] The current definitions for ''refrigerator,'' ''refrigerator-freezer,'' and ''freezer'' are found under the definitions for ''electric refrigerator,'' ''electric refrigerator-freezer,'' and ''freezer'' found in 10 CFR 430.2.

compartment temperatures that reach no lower than 37 °F but that can also reach at least as high as 60 °F are more appropriately classified as coolers instead of refrigerators. 79 FR 74894, 74901–74902. To eliminate uncertainty in product classification, DOE is amending the refrigerator and related definitions to clarify that products that meet the cooler temperature ranges are excluded from the refrigerator and related definitions. However, DOE is clarifying that these exclusions take effect on the compliance date of any energy conservation standards for combination cooler refrigeration products.

In clarifying their application, DOE notes that the phrase ''must comply with an applicable miscellaneous refrigeration product energy conservation standard'' used in the definitions of refrigerator, freezer, and refrigerator-freezer adopted in this rule is intended to more clearly express the same meaning as if the term ''subject to an applicable energy conservation standard,'' as that term is used in 10 CFR 429.12, were used. In other words, the variation of the term adopted here is not intended to convey a different meaning than if the term used in 10 CFR 429.12 were used.

In sum, other than the clarifying revisions noted earlier, DOE is amending the definitions for refrigerator, refrigerator-freezer, and freezer in a manner consistent with the 2016 SNOPD proposal.

D. General Terms for the Groups of Products Addressed in This Rule

In the 2016 SNOPD, DOE proposed to define the terms ''miscellaneous refrigeration product'' and ''consumer refrigeration product'' in a manner consistent with the MREF Working Group recommendations in Term Sheet #1. ''Miscellaneous refrigeration product'' would refer to a consumer refrigeration product other than a refrigerator, refrigerator-freezer, or freezer, which includes coolers and combination cooler refrigeration products. ''Consumer refrigeration product'' would refer to a refrigerator, refrigerator-freezer, freezer, or miscellaneous refrigeration product. These proposed terms would allow for simpler references when referring to the groups of products addressed in this final determination.

DOE did not receive any comments on the proposed definitions for ''miscellaneous refrigeration product'' and ''consumer refrigeration product'' in response to the 2016 SNOPD. Therefore, DOE is establishing the definitions as proposed in the 2016 SNOPD in this final rule.

Additionally, because DOE has determined that MREFs meet the criteria for coverage under EPCA, as discussed in section IV of this final determination, DOE is amending the definition of ''covered product'' in 10 CFR 430.2 to include MREFs.

VI. Test Procedure Discussion

A. Test Procedure Sections and Appendices Addressing the Newly Covered Products

In the Test Procedure NOPR, DOE proposed to modify appendix A to incorporate provisions that would address the test procedures for coolers and combination cooler refrigeration products. 79 FR at 74904. DOE did not receive any comment on this proposal, and is amending appendix A to include the testing requirements for all newly covered MREFs, as proposed in the Test Procedure NOPR.

DOE also proposed in the Test Procedure NOPR to amend both appendices A and B to improve their clarity and incorporate minor technical corrections. 79 FR 74894. Comments received on these provisions are addressed in the following discussion sections. After considering these comments, DOE is adopting these additional amendments for both appendices A and B to improve clarity and to maintain consistency between the two related test procedures.

B. Elimination of Definition Numbering in the Appendices

Appendices A, B, A1, and B1 each include an introductory section (''Section 1'') that defines terms that are important for describing the test procedures for these products. These sections are currently numbered such that each definition has a unique sub-section number. In the Test Procedure NOPR, DOE explained that because the definitions are all listed in alphabetical order, the current organizational structure is unnecessary. To improve the readability of these sections and to limit confusion from renumbering when definitions are added or removed, DOE proposed to eliminate the sub-section numbering to simplify the structure of these sections of the appendices. 79 FR at 74904–74905.

DOE did not receive any comments regarding this aspect of its Test Procedure NOPR proposal, and is removing the section numbering for definitions from appendices A and B in this final rule. DOE is not making a corresponding change to appendices A1 and B1 because, as described in section VI.M of this document, DOE is removing these appendices from the CFR because they are no longer relevant.

C. Removal of Provisions for Externally-Vented Products

In the Test Procedure NOPR, DOE proposed removing provisions related to externally-vented products from appendix A to help simplify and improve the appendix's clarity. These changes entailed the removal of a number of provisions, including certain definitions, testing conditions, measurements, and calculations relevant to these products. DOE also proposed to remove all references to externally-vented products from the regulatory text in § 430.23(a) of subpart B. 79 FR at 74905.

DOE did not receive any comments in response to the Test Procedure NOPR proposal on this topic and is incorporating these changes to appendix A.

D. Sampling Plans, Certification Reporting, and Measurement/Verification of Volume

In the Test Procedure NOPR, DOE proposed to apply the same statistical evaluation criteria for consumer product test samples to MREFs. In addition, DOE proposed to establish a new section 10 CFR 429.61, which would be titled ''Miscellaneous refrigeration products,'' to address sampling plans, certification reports, rounding requirements, and product category determinations for these products. 79 FR at 74905.

DOE did not receive any comments on the proposed requirements to be included in 10 CFR 429.61, and is establishing the relevant sampling plan, certification reporting, rounding, and product category determination requirements for coolers and combination cooler refrigeration products in this document. DOE notes that the provisions within 10 CFR 429.61 clarify that compartment temperatures used to determine the appropriate product category must be determined in a 90 °F ambient temperature (by referencing appendix A). Additionally, DOE has incorporated clarifying edits to the product category determination section to specify which measured values must be used in making the determination. This final rule also updates the refrigerator, refrigerator-freezer, and freezer requirements in 10 CFR 429.14 to include these clarifications (referencing appendix A for refrigerators and refrigerator-freezers, and appendix B for freezers). DOE is also clarifying in 10 CFR 429.14 which volume values must be reported and that the rounding

requirements for certified volumes do not apply until the compliance date of amended energy conservation standards for refrigerators, refrigerator-freezers, and freezers is reached. For both of these sections in 10 CFR part 429, DOE is also clarifying their section headings to specify that they refer to consumer products.

DOE's product-specific enforcement provisions are included in 10 CFR 429.134. Within this section, paragraph (b) describes the specific requirements for refrigerators, refrigerator-freezers, and freezers. In the Test Procedure NOPR, DOE proposed adding a new section within 10 CFR 429.134 to include product-specific enforcement provisions for MREFs. DOE proposed that the MREF requirements be consistent with those in place for refrigerators, refrigerator-freezers, and freezers. 79 FR at 74905.

DOE did not receive comments in response to the proposed enforcement provisions for MREFs. In this final rule, DOE is establishing a new section within 10 CFR 429.134 to include enforcement requirements for MREFs that are consistent with those currently in place for refrigerators, refrigerator-freezers, and freezers. DOE is also amending the enforcement provisions for refrigerators, refrigerator-freezers, and freezers for consistency with the rounding requirements discussed in section VI.L of this document.

DOE's current regulations in 10 CFR 429.72(c) allow the use of computer-aided design (''CAD'') models when determining volume for refrigerators, refrigerator-freezers, and freezers. In the Test Procedure NOPR, DOE proposed to add § 429.72(d) to establish the same approach for MREFs. 79 FR at 74905.

Felix Storch, Inc. (''FSI'') commented that it strongly agreed with DOE's proposal to allow CAD models in place of measured volumes for certifying volumes and testing products. (FSI, Test Procedure NOPR, No. 15 at p. 2) [6] DOE received no other comments regarding this aspect of its proposal.

In this final rule, DOE is establishing § 429.72(d) as proposed in the Test Procedure NOPR, to allow the use of CAD models when determining volume for MREFs.

[6] A notation in the form ''FSI, Test Procedure NOPR, No. 15 at p. 1'' identifies a written comment: (1) Made by Felix Storch, Inc. (FSI); (2) recorded in document number 15 that is filed in the docket of the test procedure rulemaking for miscellaneous refrigeration products (Docket No. EERE–2013– BT–TP–0029) and available for review at *www.regulations.gov*; and (3) which appears on page 1 of document number 15.

E. Compartment Definition

In the Test Procedure NOPR, DOE noted that although the term ''compartment'' is used extensively in the DOE test procedures, it had not been defined. The DOE test procedure uses the term to refer to both individual enclosed spaces within a product (*e.g.,* referring to a specific freezer compartment), as well as all enclosed spaces within a product that meet the same temperature criteria (*e.g.,* referring to the freezer compartment temperature—a volume-weighted average temperature for all individual freezer compartments within a product). DOE noted that ''compartment'' is defined in the Australian/New Zealand test procedures (AS/NZS 4474.1–2007); however, DOE noted that the AS/NZS 4474.1–2007 approach is not fully consistent with how the term ''compartment'' is used in the DOE test procedures. To limit the extent of test procedure changes necessary when including a compartment definition, DOE proposed a definition for ''compartment'' that included the two key meanings in the test procedures. 79 FR at 74905–74907.

DOE also proposed additional instructional language in section 5.3 of appendix A and appendix B to clarify how the concept of compartments should be used in the test procedures: (1) Each compartment to be evaluated would be an enclosed space without subdividing barriers that divide the space—a subdividing barrier would be defined as a solid barrier (including those that contain thermal insulation) that is sealed around all of its edges to prevent air movement from one side to the other, or has edge gaps insufficient to permit thermal convection transfer from one side to the other that would cause the temperatures on both sides of the barrier to equilibrate; (2) each evaluated compartment would not be a zone of a larger compartment unless the zone is separated from the larger compartment by subdividing barriers; and (3) if a subdividing barrier can be placed in multiple locations, it would be placed in the median position, or, if it can be placed in an even number of locations, it would be placed in the near-median position that results in a smaller (rather than larger) cooler compartment volume. DOE also proposed to include the set-up requirement for movable subdividing barriers in section 2.7 of appendix A and in section 2.5 of appendix B. 79 FR at 74906–74906.

The MREF Working Group considered the issue of a compartment definition in its discussions. Working Group members indicated that the intent of the term ''compartment,'' as included in the existing test procedures, was well-understood by industry and test laboratories, and that a definition intended to cover the multiple uses in the test procedure would potentially introduce confusion. Accordingly, the MREF Working Group recommended that DOE not include a ''compartment'' definition, and that DOE address this issue in a future rulemaking for refrigerator, refrigerator-freezer, and freezer test procedures. The MREF Working Group suggested that, at that time, DOE consider adopting a definition based on the definition in AS/NZS 4474.1–2007. The MREF Working Group also recommended that DOE include the additional clarifications for considering compartments in sections 2.7 and 5.3 of appendix A and sections 2.5 and 5.3 appendix B. The MREF Working Group further recommended that DOE clarify the definition of ''special compartment'' to more clearly distinguish between special compartments and cooler compartments within combination cooler refrigeration products. See Term Sheet #1 at pp. 7, 10, 17–18, and 32–33.

Consistent with the MREF Working Group recommendation, DOE is not amending appendix A or appendix B to include a definition for the term compartment. Instead, this final rule amends appendix A and appendix B to include the additional clarifications regarding compartments as proposed in the Test Procedure NOPR. DOE is also amending the current definition for ''special compartment,'' consistent with the MREF Working Group recommendation, to refer to any compartment, other than a butter conditioner or a cooler compartment, without doors that are directly accessible from the exterior, and with a separate temperature control (such as crispers convertible to meat keepers) that is not convertible from the fresh food temperature range to the freezer temperature range.

F. Cooler Compartments

1. Cooler Compartment Standardized Temperature

In order to ensure that test results are both repeatable and representative of consumer use, the DOE test procedures require the use of standardized compartment temperatures representative of typical consumer use. In the Test Procedure NOPR, DOE proposed a standardized cooler compartment temperature of 55 °F, which would apply to coolers and cooler compartments within

combination cooler refrigeration products. DOE noted that this temperature is already widely in use in other industry test methods. In addition, DOE market research of products with cooler compartments revealed typical temperature ranges of 45 °F to 65 °F, with 55 °F often representing the most common target temperature. 79 FR at 74907–74908.

The MREF Working Group supported DOE's proposal from the Test Procedure NOPR because 55 °F is already the industry-accepted compartment temperature for these types of products. The MREF Working Group recommended that DOE adopt the 55 °F cooler compartment temperature in its test procedures for MREFs. See Term Sheet #1 at p. 20.

For the reasons outlined in the Test Procedure NOPR, and as supported by the MREF Working Group, DOE is establishing 55 °F as the standardized cooler compartment temperature used for testing in appendix A.

2. Cooler Compartment Temperature Measurement

In the Test Procedure NOPR, DOE proposed to reference section 5.5.5.4 of AHAM Standard HRF–1–2008, (''HRF–1–2008''), *Association of Home Appliance Manufacturers, Energy and Internal Volume of Refrigerating Appliances* (2008) for the temperature measurement requirements in cooler compartments in coolers and combination cooler refrigeration products. The proposed sensor placements would be consistent with the existing requirements for fresh food compartments. To implement this change, DOE proposed to add a reference to cooler compartments in section 5.1 of appendix A, indicating that temperature sensor placement within these compartments would be performed as indicated in Figure 5.1 of AHAM HRF–1–2008. DOE also proposed to require volume-weighted averaging of cooler compartment temperatures in cases where there are multiple cooler compartments, similar to the current requirements for volume-weighted averaging of fresh food and freezer compartments in sections 5.1.3 and 5.1.4 of appendix A. 79 FR at 74908.

The MREF Working Group did not specifically address these proposals in its meetings, but it did recommend that DOE follow the same approach as outlined in the Test Procedure NOPR. See Term Sheet #1 at pp. 23–26.

Because DOE received supporting feedback, and none opposing, the Test Procedure NOPR approach, it has incorporated the proposed temperature measurement requirements for cooler compartments into appendix A.

3. Cooler Compartments as Special Compartments

In the Test Procedure NOPR, DOE proposed to treat a product as a combination cooler refrigeration product only if the cooler compartment(s) comprised at least 50 percent of the total refrigerated volume. DOE proposed that cooler compartments in products that comprised less than 50 percent of the total cooler compartment volume would be treated as special compartments. Special compartments would be tested at their coldest temperature setting. 79 FR at 74908.

As discussed in section V.B of this document, DOE has eliminated the 50-percent cooler compartment volume requirement from the combination cooler refrigeration product definition. Accordingly, the final rule will not require that cooler compartments be treated as special compartments, regardless of their volume.

4. Temperature Settings and Energy Use Calculations

In the Test Procedure NOPR, DOE proposed that the temperature settings and energy use calculations for MREFs would use an approach similar to those used in the existing refrigerator and refrigerator-freezer test procedure. Specifically, DOE proposed adding the following steps to section 3 of appendix A:

(1) The temperature controls for cooler compartments would be placed in the median position for a first test.

(2) The temperature control setting for the second test would depend on all of the measured compartment temperatures, including that of the cooler compartment. The setting would be warm for all compartments, including the cooler compartment, if the compartment temperatures measured for the first test are all below their standardized temperatures; otherwise, the temperature controls would all be set to their coldest settings.

(3) If all of the measured compartment temperatures are lower than their standardized temperatures for both tests, the energy use calculation would be based only on the second (warmest setting) test.

(4) If the measured compartment temperature of any compartment is warmer than its standardized temperatures for a test with the controls in the cold setting, the energy use calculation would be based on cold- and warm-setting tests, subject to specific restrictions based on compartment temperatures, measured energy use, except that for non-compressor refrigeration products, the energy use calculation would be based only on the cold-setting test.

(5) If neither (3) nor (4) occur, the energy use calculation would be based on both tests.

(6) The test procedure would also allow an energy use rating to be based simply on the results of a single first test, if that test is conducted with the compartment temperature controls in their warmest setting, provided that the measured compartment temperatures are all below their standardized temperatures.

79 FR at 74908–74909.

DOE proposed that the energy use calculations would follow the same approach as for the existing test procedures for refrigerators and refrigerator-freezers, in which energy use is interpolated to the standardized compartment temperatures. For combination cooler refrigeration products, DOE proposed that the highest of the three possible energy use calculations (one each for cooler compartments, fresh food compartments and/or freezer compartments) would be used to determine overall energy consumption, consistent with the approach for refrigerator-freezers. For products unable to maintain compartment temperatures below the standardized compartment temperatures at any control setting, DOE proposed extrapolating to the standardized compartment temperature using the test results at the warm and cold settings. In the case of non-compressor refrigerators unable to maintain standardized compartment temperatures, DOE proposed that the test results be based on the result of the cold setting test only. 79 FR at 74909.

The MREF Working Group discussed appropriate test settings and energy use calculations for MREFs. Working Group members disagreed with the Test Procedure NOPR proposals for addressing products unable to maintain standardized compartment temperatures. The MREF Working Group ultimately recommended that the test procedure provide no energy use rating for products unable to maintain standardized compartment temperatures, consistent with the requirements included in appendix A. The MREF Working Group supported the other proposals related to temperature settings and energy use calculations, which were consistent with the existing requirements for refrigerators and refrigerator-freezers. The Working Group also recommended that DOE revise the current version of

Table 1 in appendix A to simplify the required temperature settings for each possible compartment temperature result. See Term Sheet #1 at pp. 21–22.

The existing test procedure in appendix A states that if a product cannot maintain the applicable standardized temperature, it would receive no energy use rating. Many of the products that would receive no energy use rating would now be considered coolers under the definitions described in section V of this document, and would receive an energy use rating under the test procedures established for those products in this final rule. However, DOE is aware that certain products marketed as coolers, particularly those with non-compressor refrigeration systems, are unable to maintain a 55 °F compartment temperature in the 90 °F ambient test condition. While these products would meet the cooler definition, DOE agrees with the MREF Working Group recommendation and has specified in appendix A that these products would receive no energy use rating. DOE expects that the extrapolation approach for these products would not reflect actual energy consumption in the field, and as a result, no energy use rating is appropriate. Manufacturers of these products would be required to pursue a test procedure waiver, as described in section 7 of appendix A, to determine an appropriate energy use rating for these products that reflects actual energy use under normal consumer use.

DOE is maintaining the remaining relevant temperature setting and energy use calculation requirements as proposed and explained in the Test Procedure NOPR and recommended by the MREF Working Group.

5. Volume Calculations

In the Test Procedure NOPR, DOE proposed that the refrigerated volume calculation for a cooler compartment would be conducted in the same way as the existing volume calculations for a fresh food compartment. Specifically, the volume measurements would be conducted according to section 3.30 and sections 4.2 through 4.3 of HRF–1–2008, with additional clarifications as included in appendix A. In calculating the adjusted volume of coolers, DOE proposed a volume adjustment factor equal to 1.0. 79 FR at 74909.

For combination cooler refrigeration products, DOE proposed to apply a volume adjustment factor of 0.69 for cooler compartments. This adjustment factor was intended to account for the warmer temperature and reduced thermal load of the cooler compartment when compared to a fresh food or freezer compartment. The value of 0.69 was based on the difference between the 55 °F standardized compartment temperature and the 90 °F ambient temperature relative to the difference between the 39 °F fresh food standardized compartment temperature and the 90 °F ambient temperature (fresh food compartments have a volume adjustment factor of 1.0). 79 FR at 74909.

The MREF Working Group considered cooler compartment volume adjustment factors in its test procedure recommendation to DOE. The Working Group agreed with the Test Procedure NOPR proposal of using a volume adjustment factor of 1.0 for cooler compartment volumes within coolers (*i.e.,* products including only cooler compartments). For combination cooler refrigeration products, the Working Group also recommended a volume adjustment factor of 1.0 for the cooler compartment volumes. While the approach proposed in the Test Procedure NOPR is consistent with the calculation to determine the freezer volume adjustment factor, the Working Group determined that a corresponding calculation would not be appropriate for cooler compartments. The group discussed that cooler compartments typically have glass doors, a factor that leads to an increased thermal load for these compartments despite their higher internal compartment temperatures. The higher temperature of a cooler compartment combined with a glass door leads to a thermal load similar to a fresh food compartment with a solid door. Accordingly, the MREF Working Group recommended that DOE apply a volume adjustment factor of 1.0 to all cooler compartments in both coolers and combination cooler refrigeration products. See Term Sheet #1 at pp. 34–35.

DOE provided analytical support to the MREF Working Group discussions which led to the group's recommendation to DOE. In modeling the performance of combination cooler refrigeration products, DOE found that fresh food and cooler compartments with typical construction had very similar thermal loads. For example, assuming a 6-cubic foot volume for both the fresh food and cooler compartment in a combination cooler refrigerator with 1.5-inch wall insulation and a mid-tech glass door for the cooler compartment (*i.e.,* dual-pane with inert gas fill and low-emissivity coating) resulted in thermal loads of 28.1 Watts (W) for the cooler compartment and 27.3 W for the fresh food compartment.[7]

Based on the recommendations from the MREF Working Group and the supporting modeling data, DOE is establishing the volume calculations as proposed in the Test Procedure NOPR, except with a volume adjustment factor of 1.0 for all cooler compartments.

6. Convertible Compartments

Certain compartments may be convertible between the temperature ranges that define coolers, refrigerators, and freezers (*i.e.,* cooler, fresh food, and freezer compartment temperatures). To address this possibility, DOE proposed in the Test Procedure NOPR to modify the requirements for convertible compartments in appendix A. The proposed changes included temperature ranges in appendix A, sections 2.7 and 3.2.3, to define whether a compartment is convertible to a cooler compartment and to provide appropriate temperature settings for convertible compartments that would be tested as cooler compartments. The existing requirement that the convertible compartment be tested in its highest energy use position would not change, nor would the requirement that separate auxiliary convertible compartments be tested with the convertible compartment set as the compartment type that represents the highest energy use position. 79 FR at 74909.

DOE did not receive comments in response to the Test Procedure NOPR proposal for convertible compartments, and the MREF Working Group did not specifically address this topic in its discussions. However, the MREF Working Group included the convertible compartment requirements as proposed in the Test Procedure NOPR in its test procedure recommendation to DOE. See Term Sheet #1 at pp. 17–18, 22–23. For these reasons, DOE is adopting the proposed convertible compartment requirements from its Test Procedure NOPR for inclusion in appendix A.

G. Test Procedures for Coolers

1. Ambient Temperature and Usage Factor

DOE's existing test procedures for refrigerators, refrigerator-freezers, and freezers require testing with the cabinet doors kept closed in an environmentally-controlled room at 90 °F temperature. This test condition is intended to simulate operation in more typical room temperature conditions (72

[7] The analysis is included in the ''2015–10–20 Working Group Meeting Materials: Combination Cooler Engineering Results'' file in docket ID EERE–2011–BT–STD–0043, accessible on regulations.gov.

°F) with door openings. The test procedures for freezers apply adjustment factors to the measurements of energy use during the test to adjust for less frequent usage when compared to refrigerators and refrigerator-freezers. Appendix B applies correction factors of 0.7 for chest freezers and 0.85 for upright freezers.

DOE proposed in the Test Procedure NOPR to test vapor-compression coolers in a 90 °F ambient condition, consistent with the existing test procedures, but with a usage factor of 0.55. This proposed usage factor is lower than the 0.85 usage factor required by California Energy Commission (''CEC'') and Natural Resources Canada (''NRCan'') regulations, and applied in the AHAM test procedure these products. DOE developed the 0.55 factor by combining data on the performance impacts of the ambient temperature (72 °F for typical operation versus 90 °F for testing) and the estimated thermal loads for these products based on typical consumer use. DOE found that operation in the 72 °F temperature resulted in an average measured energy consumption of 0.46 times the value measured at the 90 °F ambient temperature. DOE estimated that consumer use for door openings and food loads would represent a 20-percent additional thermal load (based on the ratio of the 0.85 to 0.7 usage factors for upright versus chest freezers, respectively). Multiplying 0.46 by 1.2 results in the overall usage factor of 0.55 proposed in the Test Procedure NOPR for vapor-compression coolers. 79 FR at 74910–74912.

DOE testing of non-compressor coolers prior to the Test Procedure NOPR showed that certain units were unable to maintain standardized compartment temperatures in a 90 °F ambient condition. To address this issue, DOE proposed that non-compressor coolers be tested in a 72 °F ambient condition with a usage factor of 1.2 to represent the additional thermal loads associated with consumer use. 79 FR at 74910–74912.

The MREF Working Group considered ambient conditions and usage factors for cooler testing in its recommendations to DOE. The Working Group agreed with DOE's proposals for testing vapor-compression coolers, and recommended that DOE require testing in a 90 °F ambient with a 0.55 usage factor for these products. For non-compressor coolers, the Working Group disagreed with DOE's proposal. The Working Group recommended that DOE establish consistent testing requirements for all coolers, regardless of refrigeration technology. See Term Sheet #1 at pp. 14, 27.

After considering the MREF Working Group recommendations, DOE is establishing one set of test requirements for testing coolers in appendix A, regardless of refrigeration technology. DOE has included the 90 °F ambient test temperature and 0.55 usage factor as initially proposed for vapor-compression coolers in the Test Procedure NOPR. Establishing one set of test requirements ensures that all products offering the same consumer utility and function are rated on a consistent basis, providing consumers with a meaningful basis to compare product energy consumptions. As discussed in section VI.F.4 of this document, manufacturers of products unable to maintain the standardized compartment temperature in a 90 °F test condition would be required to pursue a test procedure waiver, as described in section 7 of appendix A.

2. Light Bulb Energy

In the Test Procedure NOPR, DOE noted that coolers often have glass doors that permit consumers to display stored items and manually-operated lighting to illuminate these items for better viewing. The procedures under appendices A and B require that electrically-powered features not required for normal operation and that are manually-initiated and manually-terminated must be set in their lowest energy use position during the energy test. However, Canadian Standards Association, Standard C300–08 (''CSA C300–08'') requires two tests, one each with the lights on and off, and an average energy use result. Based on field surveys conducted by Lawrence Berkeley National Laboratory (''LBNL''), which indicated that 90 percent of consumers kept light switches off in coolers,[8] DOE proposed to only test with any light switches in the off position. 79 FR at 74912.

The MREF Working Group supported DOE's proposal in the Test Procedure NOPR, and recommended that DOE require testing coolers with any light switches in the off position. See Term Sheet #1 at p. 15 (recommending use of the operational conditions for a unit under test prescribed in specific provisions from HRF–1–2008).

Based on the data cited in the Test Procedure NOPR and the MREF Working Group recommendation, DOE is requiring that cooler compartments be tested with any light switches in the off position. This requirement is consistent with the existing provisions in appendix A and appendix B for electrically-powered features not required for normal operation and that are manually-initiated and manually-terminated.

H. Non-Compressor Refrigeration Products

1. Ambient Temperature for Non-Compressor Refrigeration Products

In the Test Procedure NOPR, DOE proposed definitions and specific test provisions for non-compressor refrigerators. 79 FR at 74912–74913.

As discussed in section III of this document, DOE did not establish coverage for non-compressor refrigerators as MREFs because it is not aware of any of these products available on the market.

In response to the Test Procedure NOPR proposals, Indel B S.p.a. (''Indel B'') commented that at a 90 °F ambient temperature, it is impossible for some absorption refrigerators to work. It stated that for reasons based on the properties of the chemicals involved, raising the ambient temperature is not the same as door openings because gas mixes have a worse performance at 90 °F as opposed to a 72 °F ambient conditions. (Indel B, Public Meeting Transcript, No. 14 at p. 106) [9]

Products with non-compressor refrigeration systems would be considered coolers, not refrigerators, based on DOE's testing and the product definitions discussed earlier in this document, and would be subject to the cooler testing requirements detailed elsewhere in this final rule. Accordingly, DOE is not establishing specific testing provisions for non-compressor refrigerators in appendix A. DOE notes that while non-compressor products likely cannot maintain a 39 °F compartment temperature in a 90 °F ambient temperature, many are capable of maintaining the 55 °F compartment temperature required for cooler testing. If testing in the 90 °F ambient condition is not appropriate for certain products, manufacturers of those products would be required to pursue a test procedure waiver, as described in section 7 of appendix A, to determine an appropriate energy use rating for these products.

[8] U.S. Residential Miscellaneous Refrigeration Products: Results from Amazon Mechanical Turk Surveys, LBNL–6194E, No. 10 at pp. 43–44.

[9] A notation in the form ''Indel B, Public Meeting Transcript, No. 14 at p. 106'' identifies an oral comment that DOE received on January 8, 2015 during the Test Procedure NOPR public meeting, was recorded in the public meeting transcript in the docket for the test procedure rulemaking (Docket No. EERE–2013–BT–TP–0029). This particular notation refers to a comment (1) made by Indel B S.p.a. (Indel B) during the public meeting; (2) recorded in document number 14, which is the public meeting transcript that is filed in the docket of the test procedure rulemaking; and (3) which appears on page 106.

2. Refrigeration System Cycles

In the Test Procedure NOPR, DOE proposed to clarify in 10 CFR 430.23 that, in the context of non-compressor products, the term ''compressor cycle'' means a ''refrigeration cycle'' and that the term ''compressor'' refers to a ''refrigeration system.'' The proposal would clarify references in appendix A to specifically refer to compressor operation or complete compressor cycles. DOE proposed this approach rather than establishing parallel identical test procedures for non-compressor products, or inserting the phrase ''or refrigeration system cycles for non-compressors products,'' to simplify the text in appendix A. DOE also proposed that the test procedure requirements in place for refrigerators and refrigerator-freezers with multiple compressors would also apply to non-compressor products with multiple refrigeration systems. 79 FR at 74913–74914.

DOE did not receive feedback in response to this proposal in the Test Procedure NOPR. Therefore, in this final rule, DOE is establishing the clarification in 10 CFR 430.23(dd) as proposed in the Test Procedure NOPR.

I. Extrapolation for Refrigeration Products

Appendices A and B do not currently provide energy use ratings for products that are unable to maintain standardized compartment temperatures. The previous test procedures in appendices A1 and B1 included an extrapolation calculation based on the warm and cold test setting energy use results to estimate energy use at the standardized compartment temperatures.

In the Test Procedure NOPR, DOE proposed to include the extrapolation method in appendix A and appendix B to determine energy use ratings for refrigeration products other than non-compressor refrigerators—the Test Procedure NOPR proposed using the cold setting results only in the case of non-compressor refrigerators unable to maintain standardized compartment temperatures. The proposal would also ensure that the extrapolation method would only be used when the calculations would provide meaningful energy use results (*i.e.,* higher energy consumption associated with extrapolating to the lower compartment temperatures) by requiring that the measured warm-setting compartment temperature(s) are warmer than the cold-setting compartment temperature(s), and the measured energy use must be lower in the warm setting. 79 FR at 74914.

The MREF Working Group recommended that DOE not include the extrapolation approach in Appendix A for products unable to maintain standardized compartment temperatures. Instead, the Working Group recommended that DOE maintain the ''no energy use rating'' approach for these products. See Term Sheet #1 at pp. 21–22.

DOE notes that extrapolating energy use results from the warm and cold test settings for a test unit may result in a final energy use that would be higher than any actual energy use possible in the field. For this reason, DOE has not included the extrapolation approach in appendix A or appendix B, consistent with the recommendation from the MREF Working Group. For any units unable to maintain standardized compartment temperatures, manufacturers would instead need to apply for a test procedure waiver that would ensure representative test results.

J. Combination Cooler Refrigeration Product Test Procedures

To properly address testing issues involved with assessing the energy usage of combination cooler refrigeration products, DOE examined a number of factors. These factors included appropriate ambient temperatures, usage factors, standardized temperatures, and temperature control settings and energy use calculations. These different elements, along with the test requirements DOE is establishing in this final rule, are discussed in detail below. The test provisions for combination cooler refrigeration products discussed in this section will be required on the compliance date for any future energy conservation standards established for combination cooler refrigeration products.

1. Ambient Temperature

In the Test Procedure NOPR, DOE proposed to require that combination cooler refrigeration products be tested in a 90 °F ambient temperature. DOE proposed this test condition for consistency with the test requirements for refrigerators, refrigerator-freezers, and freezers. 79 FR at 74914–74915.

The MREF Working Group recommended DOE maintain the test conditions as proposed in the Test Procedure NOPR. See Term Sheet #1 at p. 14.

In this final rule, DOE is establishing that combination cooler refrigeration products must be tested in a 90 °F ambient temperature, consistent with the existing requirements for refrigerators, refrigerator-freezers, and freezers, as well as the newly established ambient conditions for coolers, as discussed in section VI.G.1 of this document.

2. Usage Factor

For combination cooler refrigeration products, DOE proposed in the Test Procedure NOPR that a usage adjustment factor of 0.85 be applied in the energy use calculations. Because a portion of these products is made up of a cooler compartment, DOE noted that the door opening frequency would likely be closer to that of a cooler than a refrigerator. Despite proposing a usage factor of 0.55 for coolers in the Test Procedure NOPR, DOE proposed a higher value for combination cooler refrigeration products because the 90 °F ambient temperature likely has a lesser impact on the performance of these products when compared to coolers. 79 FR at 74914–74915.

The MREF Working Group discussed the appropriate usage factor for combination cooler refrigeration products, and recommended that DOE include a factor of 0.55 for these products, consistent with the usage factor proposed and recommended for coolers. See Term Sheet #1 at p. 27. In reaching this recommendation, the Working Group also discussed limited consumer use data provided by AHAM in comments submitted in response to the Test Procedure NOPR, which indicated that combination cooler refrigeration products are used much less frequently than refrigerators or refrigerator-freezers. (AHAM, Test Procedure NOPR, No. 18 at p. 9)

Consistent with the MREF Working Group recommendation, and based on the limited available data, DOE expects that combination cooler refrigeration products are used in a similar manner to coolers—*i.e.,* not as the primary food-storage product for the residence, and typically used to store beverages. Therefore, DOE is establishing a usage factor of 0.55 in the appendix A calculations for these products, consistent with the usage factor established for coolers.

3. Temperature Control Settings and Energy Use Calculations

In the Test Procedure NOPR, DOE also proposed to require that the temperature setting requirements and resulting energy use calculations for combination cooler refrigeration products be consistent with the existing approach used for refrigerators, refrigerator-freezers, and freezers. 79 FR at 74915.

The MREF Working Group supported the approach outlined in the Test

Procedure NOPR; however, as discussed in section VI.I of this document, the Working Group recommended that DOE remove the extrapolation calculation for products not able to maintain the standardized compartment temperatures. See Term Sheet #1 at pp. 21–22.

Based on the Test Procedure NOPR proposal and the MREF Working Group's feedback, DOE is establishing the following test setting and energy use calculation approach for combination cooler refrigeration products, consistent with the existing requirements for refrigerators, refrigerator-freezers, and freezers:

(1) A first test would be conducted with all temperature controls set in their median position.

(2) If the measured compartment temperatures during the first test are all lower than the compartments' standardized temperatures, a second test would be conducted with all temperature controls set in their warmest positions. If the measured compartment temperatures for the second test are still lower than the compartments' standardized temperatures, the energy use would be calculated based on the results of the second test only. Otherwise, the energy use would be calculated based on the results of both tests.

(3) Conversely, if one or more of the measured compartment temperatures during the first test are warmer than the standardized temperature(s), the second test would be conducted with all temperature controls set in their coldest positions. If, for this second test, the measured compartment temperatures are all lower than the compartments' standardized temperatures, the results of both tests would be used to calculate the energy consumption. If one or more of the compartment temperatures are still warmer than the standardized temperatures, the test would not result in an energy use rating.

(4) Alternatively, the energy use could be calculated based on a single test conducted with all temperature controls set in their warmest position, if the measured compartment temperatures are all lower than their compartments' standardized temperatures.

For combination cooler refrigeration products, DOE is requiring that the energy use be determined based on the above steps for each individual compartment type in the product. The final energy use rating is then based on the highest calculated energy consumption from the different compartment types. This is consistent with the existing approach for refrigerator-freezers.

Because DOE is incorporating test procedures for coolers and combination cooler refrigeration products into appendix A, DOE is also revising the text and tables in section 3.2.1 of appendix A to simplify the description of the test setting requirements as they apply to all products that may be tested.

K. Incidental Changes To Test Procedure Language To Improve Clarity

In the Test Procedure NOPR, DOE proposed additional revisions to the appendix A and appendix B test procedures to improve clarity.

DOE proposed to revise the references to the different control settings needed for testing. Specifically, DOE proposed to change the language to refer to ''tests'' rather than ''test periods'' in appendix A and appendix B. 79 FR at 74923.

DOE proposed to amend the regulatory language associated with separate auxiliary compartments. Rather than discussing ''first'' fresh food or freezer compartments, DOE proposed to use the term ''primary'' fresh food or freezer compartments. *Id.*

DOE proposed to modify its definition for variable defrost. Rather than indicating that the times between defrost should vary with different usage patterns and include a continuum of lengths of time between defrosts as inputs vary, DOE proposed to modify the language by replacing ''should'' with ''must.'' *Id.*

DOE proposed to extend certain set-up provisions to some of the new product classes addressed by this document. For example, section 2.4 of appendix A describes requirements for automatic defrost refrigerator-freezers. DOE proposed to indicate in the title of this section that this provision would apply to all automatic defrost refrigeration products covered by appendix A that have freezer compartments with a temperature range equivalent to the freezer compartments of refrigerator-freezers (which would include cooler-refrigerator-freezers and cooler-freezers). Also, section 2.5 of appendix A describes requirements for all-refrigerators with small compartments for the freezing and storage of ice. DOE proposed that the title of this section be modified to also reference cooler-all-refrigerators (as well as other product types that are no longer relevant). Finally, section 2.11 of appendix A addresses refrigerators and refrigerator-freezers with demand-response capability. DOE proposed that this requirement would generally apply to refrigeration products covered by the test procedure. *Id.*

The MREF Working Group included the clarifications as described above in its test procedure recommendation to DOE. See Term Sheet #1 at pp. 15–19. DOE did not receive any additional feedback on these proposals; therefore, DOE is establishing the clarifications in appendix A and appendix B as proposed in the Test Procedure NOPR.

In addition to the clarifications described above and proposed in the Test Procedure NOPR, DOE is also correcting an error identified in appendix A. DOE published a final rule in the **Federal Register** on January 25, 2012, which, in relevant part, updated Figure 1 in section 4.2.1.1 of appendix A. 79 FR 22320. On April 21, 2014, DOE published a final rule that inadvertently removed Figure 1 from section 4.2.1.1 of appendix A. DOE is reinserting Figure 1 into section 4.2.1.1 to improve the clarity of the test procedure. Neither the error nor the correction in this document affect the substance of the test procedure or compliance with existing energy conservation standards. Accordingly, DOE finds that notice and comment is unnecessary for this clarifying amendment.

DOE is also amending certain sections in appendix A to remove specific references to fresh food and freezer compartments. The existing phrasing in appendix A would exclude MREFs containing cooler compartments.

In section 5.1(b) of appendices A and B, DOE is clarifying that thermocouples may be relocated to maintain a minimum 1-inch air space from adjustable shelves or component, but that the sensors shall not be relocated if the instructions in HRF–1–2008 specify a location with less than 1 inch distance to a component.

L. Changes to Volume Measurement and Calculation Instructions

Due to questions received regarding how to account for certain component volumes, DOE issued guidance on the proper treatment of such components in August 2012 (''Guidance on Component Consideration in Volume Measurements,'' No. 11, (''August 2012 Guidance'')).[10] DOE proposed in the Test Procedure NOPR to amend appendices A and B to clarify the appropriate volume measurements consistent with the instructions provided in the August 2012 Guidance. DOE also proposed rounding requirements for compartment and overall volumes, and to refer to adjusted total volume as ''AV'' rather than ''VA''

[10] This and other DOE guidance documents are available for viewing at *http://www1.eere.energy.gov/guidance/default.aspx?pid=2&spid=1.*

in appendix A and appendix B. 79 FR at 74923.

The MREF Working Group discussed the Test Procedure NOPR proposals for volume measurements and calculations, and generally supported their inclusion in the test procedures. However, the Working Group recommended that the new rounding requirements for refrigerator, refrigerator-freezer, and freezer volumes not be required for use until the compliance date of any amended energy conservation standards for these products. The MREF Working Group recommended that the test procedure include an introductory note to clarify this point. See Term Sheet #1 at p. 8.

DOE agrees with the MREF Working Group recommendations regarding volume measurements and calculations. Additionally, although the Working Group did not make specific recommendations for updating appendix B for freezers, DOE is incorporating similar changes into appendix B to maintain consistency between the two test procedures. Accordingly, DOE is establishing the following requirements and clarifications in appendix A and appendix B.

The following component volumes shall not be included in the compartment volume measurements: Icemaker compartment insulation (*e.g.,* insulation isolating the icemaker compartment from the fresh food compartment of a product with a bottom-mounted freezer with through-the-door ice service), fountain recess, dispenser insulation, and ice chute (if there is a plug, cover, or cap over the chute per Figure 4–2 of HRF–2–2008). However, the following component volumes shall be included in the compartment volume measurements: icemaker auger motor (if housed inside the insulated space of the cabinet), icemaker kit, ice storage bin, and ice chute (up to the dispenser flap, if there is no plug, cover, or cap over the ice chute per Figure 4–3 of HRF–1–2008).

Adjusted total volume was previously designated VA in appendices A and B, whereas it is designated AV in 10 CFR 430.32. DOE is changing the designation to AV in the test procedure appendices for consistency.

Volumes of freezer, fresh food, and cooler compartments shall be rounded to the nearest 0.01 cubic foot, and if the volumes of these compartments are recorded in liters, they shall be converted to cubic feet and rounded to the nearest 0.01 cubic foot before using these values when calculating the total refrigerated volume or adjusted total volume. Total refrigerated volume and adjusted volume shall be recorded to the nearest 0.1 cubic foot. DOE is also including the clarifying note as recommended by the MREF Working Group to explain that the new rounding requirements are not required until the compliance date of any amended energy conservation standards for refrigerators, refrigerator-freezers, and freezers.

M. Removal of Appendices A1 and B1

The most recent energy conservation standards for refrigerators, refrigerator-freezers, and freezers took effect for products manufactured on or after September 15, 2014. To prevent confusion and to eliminate unnecessary regulatory text, DOE proposed in the Test Procedure NOPR to remove appendix A1 and appendix B1 from subpart B to 10 CFR part 430 and to remove reference to these appendices in other parts of the regulations. 79 FR at 74923–74924.

Appendices A1 and B1 incorporated by reference ANSI/AHAM HRF–1–1979, (Revision of ANSI B38.1–1970), (''HRF–1–1979''), *American National Standard, Household Refrigerators, Combination Refrigerator-Freezers and Household Freezers.* DOE proposed removing HRF–1–1979 from the list of standards incorporated by reference, corresponding to the removal of appendix A1 and appendix B1. 79 FR at 74924.

DOE did not receive any comments on this topic, and is removing appendix A1 and appendix B1 from 10 CFR part 430, subpart B. DOE is also removing HRF–1–1979 from the list of standards incorporated by reference in 10 CFR 430.3.

N. Compliance With Other EPCA Requirements

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. 42 U.S.C. 6293(b)(3). DOE has concluded that the amendments established by this final rule satisfy this requirement.

The test procedures established in this final rule apply primarily to products currently unregulated by DOE. Most of these products are very similar to refrigerators, refrigerator-freezers, and freezers, and use refrigeration systems to keep the interiors of insulated cabinets cool. The test procedures are based on, and consistent with, test procedures currently required for testing refrigerators, refrigerator-freezers, and freezers and would not represent any greater test burden than DOE's test procedures for these products.

DOE considered whether the test procedures could be modified to further reduce test burden without negatively affecting test accuracy and concluded that there are no such options for modification at this time that would significantly reduce the burden beyond the steps already taken and described above.

2. Changes in Measured Energy Use

There currently are no DOE test procedures or energy conservation standards for coolers and combination cooler refrigeration products. Hence, the amendments established in this final rule do not change the measured energy use for these products.

For refrigerators, refrigerator-freezers, and freezers, the amendments established in this final rule only clarify the existing test provisions for these products and do not result in any changes in measured energy use. However, as discussed in sections V.B and VI.J of this document, combination cooler refrigeration products, according to the definitions established in this rule, are currently certified for compliance with the existing refrigerator, refrigerator-freezer, and freezer energy conservation standards based on testing according to test procedure waivers. The amendments established in this final rule will not affect the measured energy use for these products, and corresponding compliance with existing energy conservation standards, because the relevant test procedure amendments will not take effect until the compliance date of energy conservation standards for combination cooler refrigeration products. Accordingly, manufacturers of combination cooler refrigeration products will continue to meet these current standards until the compliance date of any applicable MREF standards is reached—at which point, these products will be required to satisfy the new MREF standards.

3. Standby and Off Mode Energy Use

EPCA directs DOE to amend its test procedures to include standby mode and off mode energy consumption. It also requires that this energy consumption be integrated into the overall energy consumption descriptor for the product, unless DOE determines that the current test procedures for the product already fully account for and incorporate the standby and off mode

energy consumption of the covered product. (42 U.S.C. 6295(gg)(2)(A)(i)).

The test procedures established in this final rule measure the energy use of the affected products during extended time periods that include periods when the compressor and other key components are cycled off. All of the energy these products use during the ''off cycles'' would be included in the measurements. A given refrigeration product being tested could include auxiliary features that draw power in a standby or off mode. In such instances, HRF–1–2008, which is incorporated in relevant part into the DOE test procedures, generally instructs manufacturers to set certain auxiliary features to the lowest power position during testing. In this lowest power position, any standby or off mode energy use of such auxiliary features would be included in the energy measurement. Hence, no additional test procedure changes are necessary to account for standby and off mode energy consumption.

VII. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget (OMB) has determined that coverage determination and test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Additionally, the definitions established in this document clarify the definitions of certain specific products already regulated by DOE and those products that are under consideration for potential regulatory coverage. Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (''OIRA'') in the OMB.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.,* as amended by the Small Business Regulatory Fairness Act of 1996) requires preparation of an initial regulatory flexibility analysis (''IRFA'') for any rule that by law must be proposed for public comment and a final regulatory flexibility analysis (''FRFA'') for any such rule that an agency adopts as a final rule, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. A regulatory flexibility analysis examines the impact of the rule on small entities and considers alternative ways of reducing negative effects. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (Aug. 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 Web site: *http://energy.gov/gc/office-general-counsel*. DOE reviewed this final rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE has concluded that the rule would not have a significant impact on a substantial number of small entities. The factual basis for this certification is as follows:

For manufacturers of consumer refrigeration products, 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 size standards published on January 31, 1996, as amended, to determine whether any small entities would be required to comply with the rule. 61 FR 3280, 3286, as amended at 67 FR 3041, 3045 (Jan. 23, 2002) and at 69 FR 29192, 29203 (May 21, 2004); see also 65 FR 30836, 30850 (May 15, 2000), as amended at 65 FR 53533, 53545 (Sept. 5, 2000). The size standards are codified at 13 CFR part 121. The standards are listed by North American Industry Classification System (''NAICS'') code and industry description and are available at *http://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf*. MREF manufacturers are classified under NAICS 335222, ''Household Refrigerator and Home Freezer Manufacturing'' and 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 NAICS 335222 and 333415.

In this final rule, DOE establishes coverage and test procedures for MREFs, comprising coolers and combination cooler refrigeration products. As described in section VI.N.2, there are no current DOE energy conservation standards for MREFs; however, certain products that would be considered MREFs currently must meet and certify compliance with, existing refrigerator, refrigerator-freezer, and freezer energy conservation standards.

The test procedures established in this final rule may impact manufacturers who are required to test their products in accordance with these requirements. DOE has analyzed these impacts on small businesses and presents its findings below.

DOE examined the potential impacts of the new testing procedures established in this rulemaking under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. In using these procedures, DOE conducted a more focused inquiry into small business manufacturers of products that would be covered by this proposal. During its market survey, DOE used all available public information to identify potential small manufacturers. DOE's research involved reviewing product databases (*e.g.,* CEC and NRCan databases) and individual company Web sites to create a list of companies that manufacture or sell MREFs. DOE reviewed these data to determine whether the entities met the SBA's definition of a small business manufacturer of MREFs and screened out companies that: (1) Do not offer products that would be affected by the proposed amendments, (2) do not meet the definition of a ''small business,'' or (3) are foreign-owned and operated.

Using the SBA's definition, DOE identified two small businesses that would be affected by this final rule. From its analysis, DOE determined the expected impacts of the final rule on affected small businesses and whether DOE could certify that this rulemaking would not have a significant economic impact on a substantial number of small entities.

This final rule establishes test procedures for manufacturers to use as a basis for representations of the energy efficiency of all coolers beginning on January 17, 2017, and of combination cooler refrigeration products starting on the effective date of energy conservation standards for those products. Coolers are currently regulated by the CEC and NRCan as wine chillers. DOE assumes that such products sold in California and/or Canada are the same products sold in the remaining states. Hence, manufacturers likely have already tested such products in order to report energy use to CEC and/or NRCan. The established test procedures modify the calculation of energy use for these products compared to the calculations used by these regulatory entities, but do not require retesting of individual models. With respect to manufacturers of combination cooler refrigeration products, these manufacturers already apply a test method (through a DOE-

granted test procedure waiver) that accounts for the warmer cooler compartment temperatures of these products. Similar to coolers, these products would require a modified calculation of energy use, but would not require retesting. For any products not currently tested by manufacturers, DOE estimates an average of $2,500 per test. This estimate is based on input from third-party testing laboratories for conducting these and similar tests.

FSI commented that DOE's estimate of $2,500 per test is too low, and that it had received quotes of $4,500 per test from two laboratories. (FSI, Test Procedure NOPR, No. 15 at pp. 4–5) As explained earlier in this section, DOE believes that all newly covered products that will be subject to the testing requirements established in this final rule are already tested according to similar test methods. Therefore, DOE does not expect this rule to require any additional manufacturer testing beyond what is currently in place. However, if additional testing were to be required, the costs would likely be within the range identified by DOE and the FSI comment.

The primary cost for small businesses under this rulemaking would result from the aforementioned modified calculations and potential testing requirements. As mentioned above, existing cooler models that are being sold in the U.S. are assumed to have already been tested and would require only an adjustment of the calculated energy use. DOE estimated that 23 basic models of coolers are available from the identified small businesses. DOE estimated that revising the energy use representations for these products would require 220 hours of effort for each manufacturer. The average hourly salary for an engineer completing these tasks is estimated to be $44.36.[11] Fringe benefits are estimated to be 30 percent of total compensation, which brings the hourly costs to employers associated with reviewing and filing of reports to $57.67.[12] Therefore, total costs to small businesses to implement the requirements of this rulemaking are estimated to be $25,000, or an average of $12,500 per small business.

DOE also analyzed the testing cost burden relative to the revenues of small manufacturers. Based on this analysis, DOE estimates that the cost burden for revising representations of coolers ranges from 0.02 to 0.04 percent of annual revenues, depending on the specific small business. DOE concludes that these values are unlikely to represent a significant economic impact for small businesses.

Based on the criteria outlined above, DOE has determined that the test procedures established in this final rule would not have a ''significant economic impact on a substantial number of small entities,'' and the preparation of a regulatory flexibility analysis is not required. DOE has transmitted its certification and supporting statement of factual basis for both the coverage determination and test procedure to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

DOE's coverage determination does not impose any new information or record-keeping requirements on manufacturers. Manufacturers of MREFs must test their products in accordance with the DOE test procedure and are required to retain records of that testing. Should DOE promulgate energy conservation standards for MREF products, manufacturers must certify to DOE that their products comply with any applicable energy conservation standards. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment. See 10 CFR part 429, subpart B. The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (''PRA''). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 30 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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

D. Review Under the National Environmental Policy Act of 1969

DOE has determined that MREFs (as defined in this document) meet the criteria for classification as covered products and that future energy conservation standards may be warranted to regulate their energy usage. Should DOE pursue that option, the relevant environmental impacts would be explored as part of that rulemaking. Additionally, this final rule establishes test procedures for MREFs and amends the existing test procedures for refrigerators, refrigerator-freezers, and 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. First, this action establishes a class of products (''MREFs'') for which energy conservation standards would be appropriate. However, this action does not establish energy conservation standards, and, therefore, does not result in any environmental impacts. Thus, this action is covered by Categorical Exclusion A6 ''Procedural rulemakings'' under 10 CFR part 1021, subpart D. Second, this rule amends the existing test procedures without affecting the amount, quality or distribution of energy usage, and, therefore, will 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, under either of these exclusions, 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 examined this final rule and has

[11] U.S. Department of Labor, Bureau of Labor Statistics. 2011. National Occupational Employment and Wage Estimates. Washington, DC.

[12] U.S. Department of Labor, Bureau of Labor Statistics. 2010. Employer Costs for Employee Compensation—Management, Professional, and Related Employees. Washington, DC.

determined that it will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this 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.

DOE notes that currently existing State and local level energy conservation standards for MREFs that were prescribed or enacted prior to the publication of any standards that DOE may set for these products will not be preempted until the compliance date of those Federal standards. (42 U.S.C. 6295(ii)(1)).

F. Review Under Executive Order 12988

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

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving document 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 (This policy is also available at *http://energy.gov/gc/office-general-counsel*). DOE examined this final rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year. Accordingly, no further assessment or analysis is required under UMRA.

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

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

I. Review Under Executive Order 12630

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

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

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgates 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 if the regulation is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

This regulatory action establishes coverage over MREFs and determines that they meet the criteria for a covered product for which the Secretary may prescribe an energy conservation standard pursuant to 42 U.S.C. 6295(o) and (p). Additionally, this action sets out certain definitions related to these products and test procedures to measure their energy efficiency. None of these actions, in part or as a whole, comprises a significant regulatory action under Executive Order 12866. Moreover, this rule will 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 the Information Quality Bulletin for Peer Review

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy (''OSTP''), issued its Final Information Quality Bulletin for Peer Review (the Bulletin). 70 FR 2664 (January 14, 2005). The Bulletin establishes that certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal government, including influential scientific information related to agency regulatory actions. The purpose of the Bulletin is to enhance the quality and credibility of the Government's scientific information. DOE has determined that the analyses conducted for the regulatory action discussed in this document do not constitute ''influential scientific information,'' which the Bulletin defines as ''scientific information the agency reasonably can determine will have or does have a clear and substantial impact on important public policies or private sector decisions.'' 70 FR 2667 (January 14, 2005). The analyses were subject to pre-dissemination review prior to issuance of this rulemaking.

DOE will determine the appropriate level of review that would apply to any future rulemaking to establish energy conservation standards for MREFs.

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

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

N. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule before its effective date. The report will state that it has been determined that the rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

VIII. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

Confidential business information, Energy conservation, Household appliances, Imports, Reporting and recordkeeping requirements.

10 CFR Part 430

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

Issued in Washington, DC, on June 10, 2016.

Kathleen B. Hogan,

Deputy Assistant Secretary for Energy Efficiency Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE is amending parts 429 and 430 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.

■ 2. Section 429.12 is amended by revising the fifth entry of the table in paragraph (d) to read as follows:

§ 429.12 General requirements applicable to certification reports.

* * * * *

(d) * * *

Product category	Deadline for data submission
* * * * * * *	
Residential refrigerators, Residential refrigerators-freezers, Residential freezers, Commercial refrigerator, freezer, and refrigerator-freezer, Automatic commercial automatic ice makers, Refrigerated bottled or canned beverage vending machine, Walk-in coolers, Walk-in freezers, and Miscellaneous refrigeration products.	Aug. 1.
* * * * * * *	

* * * * *

■ 3. Section 429.14 is amended by:

■ a. Revising the section heading and paragraph (a)(3); and

■ b. Adding paragraphs (c) and (d), with paragraphs (c)(2) and (3) stayed indefinitely.

The revisions and additions read as follows:

§ 429.14 Consumer refrigerators, refrigerator-freezers and freezers.

(a) * * *

(3) The value of total refrigerated volume of a basic model reported in accordance with paragraph (b)(2) of this section shall be the mean of the total refrigerated volumes measured for each tested unit of the basic model or the total refrigerated volume of the basic model as calculated in accordance with § 429.72(c). The value of adjusted total volume of a basic model reported in accordance with paragraph (b)(2) of this section shall be the mean of the adjusted total volumes measured for each tested unit of the basic model or the adjusted total volume of the basic model as calculated in accordance with § 429.72(c).

* * * * *

(c) *Rounding requirements for representative values, including certified and rated values.* (1) The represented value of annual energy use must be rounded to the nearest kilowatt hour per year.

(2) The represented value of total refrigerated volume must be rounded to the nearest 0.1 cubic foot.

(3) The represented value of adjusted total volume must be rounded to the nearest 0.1 cubic foot.

(d) *Product category determination.* Each basic model shall be certified according to the appropriate product category as defined in § 430.2 based on compartment volumes and compartment temperatures.

(1) Compartment volumes used to determine product category shall be the mean of the measured compartment volumes for each tested unit of the basic model according to the provisions in section 5.3 of appendix A of subpart B of part 430 of this chapter for refrigerators and refrigerator-freezers and section 5.3 of appendix B of subpart B of part 430 of this chapter for freezers, or the compartment volumes of the basic model as calculated in accordance with § 429.72(d); and

(2) Compartment temperatures used to determine product category shall be the mean of the measured compartment temperatures at the coldest setting for each tested unit of the basic model according to the provisions section 5.1 of appendix A of subpart B of part 430 of this chapter for refrigerators and refrigerator-freezers and section 5.1 of appendix B of subpart B of part 430 of this chapter for freezers.

■ 4. Section 429.61 is added to read as follows:

§ 429.61 Consumer miscellaneous refrigeration products.

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

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

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

(A) The mean of the sample, where:

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

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

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

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

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

and

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

(A) The mean of the sample, where:

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

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

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

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

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

(3) The value of total refrigerated volume of a basic model reported in accordance with paragraph (b)(2) of this section shall be the mean of the total refrigerated volumes measured for each tested unit of the basic model or the total refrigerated volume of the basic model as calculated in accordance with § 429.72(d). The value of adjusted total volume of a basic model reported in accordance with paragraph (b)(2) of this section shall be the mean of the adjusted total volumes measured for each tested unit of the basic model or the adjusted total volume of the basic model as calculated in accordance with § 429.72(d).

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

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

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

(c) *Rounding requirements for representative values, including certified and rated values.* (1) The represented value of annual energy use must be rounded to the nearest kilowatt hour per year.

(2) The represented value of total refrigerated volume must be rounded to the nearest 0.1 cubic foot.

(3) The represented value of adjusted total volume must be rounded to the nearest 0.1 cubic foot.

(d) *Product category determination.* Each basic model of miscellaneous refrigeration product must be certified according to the appropriate product category as defined in § 430.2 based on compartment volumes and compartment temperatures.

(1) Compartment volumes used to determine product category shall be the mean of the measured compartment volumes for each tested unit of the basic model according to the provisions in section 5.3 of appendix A to subpart B of part 430 of this chapter, or the compartment volumes of the basic model as calculated in accordance with § 429.72(d); and

(2) Compartment temperatures used to determine product category shall be the mean of the measured compartment temperatures at the coldest setting for each tested unit of the basic model according to the provisions section 5.1 of appendix A to subpart B of part 430 of this chapter. For cooler compartments with temperatures below 39 °F (3.9 °C) but no lower than 37 °F (2.8 °C), the compartment temperatures used to determine product category shall also include the mean of the measured compartment temperatures at the warmest setting for each tested unit of the basic model according to the provisions section 5.1 of appendix A to subpart B of part 430 of this chapter.

■ 5. Section 429.72 is amended by adding paragraph (d) to read as follows:

§ 429.72 Alternative methods for determining non-energy ratings.

* * * * *

(d) *Miscellaneous refrigeration products.* The total refrigerated volume of a miscellaneous refrigeration product basic model may be determined by performing a calculation of the volume based upon computer-aided design (CAD) models of the basic model in lieu of physical measurements of a production unit of the basic model. Any value of total adjusted volume and value of total refrigerated volume of a basic model reported to DOE in a certification of compliance in accordance with § 429.61(b)(2) must be calculated using the CAD-derived volume(s) and the applicable provisions in the test procedures in part 430 of this chapter for measuring volume. The calculated value must be within two percent, or 0.5 cubic feet (0.2 cubic feet for products with total refrigerated volume less than 7.75 cubic feet (220 liters)), whichever is greater, of the volume of a production unit of the basic model measured in accordance with the applicable test procedure in part 430 of this chapter.

■ 6. Section 429.134 is amended by revising paragraph (b)(1)(ii)(B) and adding paragraph (l) to read as follows:

§ 429.134 Product-specific enforcement provisions.

* * * * *

(b) * * *

(1) * * *

(ii) * * *

(B) If the certified total refrigerated volume is found to be invalid, the average measured adjusted total volume, rounded to the nearest 0.1 cubic foot, will serve as the basis for calculation of maximum allowed energy use for the tested basic model.

* * * * *

(l) *Miscellaneous refrigeration products*—(1) *Verification of total refrigerated volume.* For all miscellaneous refrigeration products, the total refrigerated volume of the basic model will be measured pursuant to the test requirements of part 430 of this chapter for each unit tested. The results of the measurement(s) will be averaged and compared to the value of total refrigerated volume certified by the manufacturer. The certified total refrigerated volume will be considered valid only if:

(i) The measurement is within two percent, or 0.5 cubic feet (0.2 cubic feet for products with total refrigerated volume less than 7.75 cubic feet (220 liters)), whichever is greater, of the certified total refrigerated volume; or

(ii) The measurement is greater than the certified total refrigerated volume.

(A) If the certified total refrigerated volume is found to be valid, the certified adjusted total volume will be used as the basis for calculating the maximum allowed energy use for the tested basic model.

(B) If the certified total refrigerated volume is found to be invalid, the average measured adjusted total volume, rounded to the nearest 0.1 cubic foot, will serve as the basis for calculating the maximum allowed energy use for the tested basic model.

(2) *Test for models with two compartments, each having its own user-operable temperature control.* The test described in section 3.3 of the applicable test procedure in appendix A to subpart B part 430 of this chapter shall be used for all units of a tested basic model before DOE makes a determination of noncompliance with respect to the basic model.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

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

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

■ 8. Section 430.2 is amended by:

■ a. Adding, in alphabetical order, definitions for ''all-refrigerator,'' ''built-in compact cooler,'' ''built-in cooler,'' ''combination cooler refrigeration product,'' ''consumer refrigeration product,'' ''cooler,'' ''cooler-all-refrigerator,'' ''cooler-freezer,'' ''cooler-refrigerator,'' ''cooler-refrigerator-freezer,'' ''freestanding compact cooler,'' ''freestanding cooler,'' and ''miscellaneous refrigeration product'';

■ b. Revising the definitions for ''covered product,'' ''freezer,'' ''refrigerator,'' and ''refrigerator-freezer''; and

■ c. Removing the definitions for ''electric refrigerator'' and ''electric refrigerator-freezer.''

The additions and revisions read as follows:

§ 430.2 Definitions.

* * * * *

All-refrigerator means a refrigerator that does not include a compartment capable of maintaining compartment temperatures below 32 °F (0 °C) as determined according to the provisions in § 429.14(d)(2) of this chapter. It may include a compartment of 0.50 cubic-foot capacity (14.2 liters) or less for the freezing and storage of ice.

* * * * *

Built-in compact cooler means any cooler with a total refrigerated volume less than 7.75 cubic feet and no more than 24 inches in depth, excluding doors, handles, and custom front panels, that is designed, intended, and marketed exclusively to be:

(1) Installed totally encased by cabinetry or panels that are attached during installation;

(2) Securely fastened to adjacent cabinetry, walls or floor;

(3) Equipped with unfinished sides that are not visible after installation; and

(4) Equipped with an integral factory-finished face or built to accept a custom front panel.

Built-in cooler means any cooler with a total refrigerated volume of 7.75 cubic feet or greater and no more than 24 inches in depth, excluding doors, handles, and custom front panels; that is designed, intended, and marketed exclusively to be:

(1) Installed totally encased by cabinetry or panels that are attached during installation;

(2) Securely fastened to adjacent cabinetry, walls or floor;

(3) Equipped with unfinished sides that are not visible after installation; and

(4) Equipped with an integral factory-finished face or built to accept a custom front panel.

* * * * *

Combination cooler refrigeration product means any cooler-refrigerator, cooler-refrigerator-freezer, or cooler-freezer.

* * * * *

Consumer refrigeration product means a refrigerator, refrigerator-freezer, freezer, or miscellaneous refrigeration product.

* * * * *

Cooler means a cabinet, used with one or more doors, that has a source of refrigeration capable of operating on single-phase, alternating current and is capable of maintaining compartment temperatures either:

(1) No lower than 39 °F (3.9 °C); or

(2) In a range that extends no lower than 37 °F (2.8 °C) but at least as high as 60 °F (15.6 °C) as determined according to the applicable provisions in § 429.61(d)(2) of this chapter.

Cooler-all-refrigerator means a cooler-refrigerator that does not include a compartment capable of maintaining compartment temperatures below 32 °F (0 °C) as determined according to the provisions in § 429.61(d)(2) of this chapter. It may include a compartment of 0.50 cubic-foot capacity (14.2 liters) or less for the freezing and storage of ice.

Cooler-freezer means a cabinet, used with one or more doors, that has a source of refrigeration that requires

single-phase, alternating current electric energy input only, and consists of two or more compartments, including at least one cooler compartment as defined in appendix A of subpart B of this part, where the remaining compartment(s) are capable of maintaining compartment temperatures at 0 °F (−17.8 °C) or below as determined according to the provisions in § 429.61(d)(2) of this chapter.

Cooler-refrigerator means a cabinet, used with one or more doors, that has a source of refrigeration that requires single-phase, alternating current electric energy input only, and consists of two or more compartments, including at least one cooler compartment as defined in appendix A of subpart B of this part, where:

(1) At least one of the remaining compartments is not a cooler compartment as defined in appendix A of subpart B of this part and is capable of maintaining compartment temperatures above 32 °F (0 °C) and below 39 °F (3.9 °C) as determined according to § 429.61(d)(2) of this chapter;

(2) The cabinet may also include a compartment capable of maintaining compartment temperatures below 32 °F (0 °C) as determined according to § 429.61(d)(2) of this chapter; but

(3) The cabinet does not provide a separate low temperature compartment capable of maintaining compartment temperatures below 8 °F (−13.3 °C) as determined according to § 429.61(d)(2) of this chapter.

Cooler-refrigerator-freezer means a cabinet, used with one or more doors, that has a source of refrigeration that requires single-phase, alternating current electric energy input only, and consists of three or more compartments, including at least one cooler compartment as defined in appendix A of subpart B of this part, where:

(1) At least one of the remaining compartments is not a cooler compartment as defined in appendix A of subpart B of this part and is capable of maintaining compartment temperatures above 32 °F (0 °C) and below 39 °F (3.9 °C) as determined according to § 429.61(d)(2) of this chapter; and

(2) At least one other compartment is capable of maintaining compartment temperatures below 8 °F (−13.3 °C) and may be adjusted by the user to a temperature of 0 °F (−17.8 °C) or below as determined according to § 429.61(d)(2) of this chapter.

* * * * *

Covered product means a consumer product—

(1) Of a type specified in section 322 of the Act; or

(2) That is a ceiling fan, ceiling fan light kit, medium base compact fluorescent lamp, dehumidifier, battery charger, external power supply, torchiere, portable air conditioner, or miscellaneous refrigeration product.

* * * * *

Freestanding compact cooler means any cooler, excluding built-in compact coolers, with a total refrigerated volume less than 7.75 cubic feet.

Freestanding cooler means any cooler, excluding built-in coolers, with a total refrigerated volume of 7.75 cubic feet or greater.

Freezer means a cabinet, used with one or more doors, that has a source of refrigeration that requires single-phase, alternating current electric energy input only and is capable of maintaining compartment temperatures of 0 °F (−17.8 °C) or below as determined according to the provisions in § 429.14(d)(2) of this chapter. It does not include any refrigerated cabinet that consists solely of an automatic ice maker and an ice storage bin arranged so that operation of the automatic icemaker fills the bin to its capacity. However, the term does not include:

(1) Any product that does not include a compressor and condenser unit as an integral part of the cabinet assembly; or

(2) Any miscellaneous refrigeration product that must comply with an applicable miscellaneous refrigeration product energy conservation standard.

* * * * *

Miscellaneous refrigeration product means a consumer refrigeration product other than a refrigerator, refrigerator-freezer, or freezer, which includes coolers and combination cooler refrigeration products.

* * * * *

Refrigerator means a cabinet, used with one or more doors, that has a source of refrigeration that requires single-phase, alternating current electric energy input only and is capable of maintaining compartment temperatures above 32 °F (0 °C) and below 39 °F (3.9 °C) as determined according to § 429.14(d)(2) of this chapter. A refrigerator may include a compartment capable of maintaining compartment temperatures below 32 °F (0 °C), but does not provide a separate low temperature compartment capable of maintaining compartment temperatures below 8 °F (−13.3 °C) as determined according to § 429.14(d)(2). However, the term does not include:

(1) Any product that does not include a compressor and condenser unit as an integral part of the cabinet assembly;

(2) A cooler; or

(3) Any miscellaneous refrigeration product that must comply with an applicable miscellaneous refrigeration product energy conservation standard.

Refrigerator-freezer means a cabinet, used with one or more doors, that has a source of refrigeration that requires single-phase, alternating current electric energy input only and consists of two or more compartments where at least one of the compartments is capable of maintaining compartment temperatures above 32 °F (0 °C) and below 39 °F (3.9 °C) as determined according to § 429.14(d)(2) of this chapter, and at least one other compartment is capable of maintaining compartment temperatures of 8 °F (−13.3 °C) and may be adjusted by the user to a temperature of 0 °F (−17.8 °C) or below as determined according to § 429.14(d)(2). However, the term does not include:

(1) Any product that does not include a compressor and condenser unit as an integral part of the cabinet assembly; or

(2) Any miscellaneous refrigeration product that must comply with an applicable miscellaneous refrigeration product energy conservation standard.

* * * * *

§ 430.3 [Amended]

■ 9. Section 430.3 is amended by:
■ a. Removing paragraph (i)(5); and
■ b. Redesignating paragraphs (i)(6) through (8) as paragraphs (i)(5) through (7).

■ 10. Section 430.23 is amended by:
■ a. Revising paragraphs (a) and (b); and
■ b. Adding paragraph (dd).

The revisions and additions read as follows:

§ 430.23 Test procedures for the measurement of energy and water consumption.

* * * * *

(a) *Refrigerators and refrigerator-freezers.* (1) The estimated annual operating cost for models without an anti-sweat heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(2) The estimated annual operating cost for models with an anti-sweat

heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(3) The estimated annual operating cost for any other specified cycle type shall be the product of the following three factors, the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the specified cycle type, determined according to section 6.2 of appendix A of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(4) The energy factor, expressed in cubic feet per kilowatt-hour per cycle, shall be:

(i) For models without an anti-sweat heater switch, the quotient of:

(A) The adjusted total volume in cubic feet, determined according to section 6.1 of appendix A of this subpart, divided by—

(B) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart, the resulting quotient then being rounded to the second decimal place; and

(ii) For models having an anti-sweat heater switch, the quotient of:

(A) The adjusted total volume in cubic feet, determined according to 6.1 of appendix A of this subpart, divided by—

(B) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart, the resulting quotient then being rounded to the second decimal place.

(5) The annual energy use, expressed in kilowatt-hours per year, shall be the following, rounded to the nearest kilowatt-hour per year:

(i) For models without an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by the average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(ii) For models having an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart.

(6) Other useful measures of energy consumption shall be those measures of energy consumption that the Secretary determines are likely to assist consumers in making purchasing decisions which are derived from the application of appendix A of this subpart.

(7) The following principles of interpretation shall be applied to the test procedure. The intent of the energy test procedure is to simulate typical room conditions (72 °F (22.2 °C)) with door openings, by testing at 90 °F (32.2 °C) without door openings. Except for operating characteristics that are affected by ambient temperature (for example, compressor percent run time), the unit, when tested under this test procedure, shall operate in a manner equivalent to the unit's operation while in typical room conditions.

(i) The energy used by the unit shall be calculated when a calculation is provided by the test procedure. Energy consuming components that operate in typical room conditions (including as a result of door openings, or a function of humidity), and that are not excluded by this test procedure, shall operate in an equivalent manner during energy testing under this test procedure, or be accounted for by all calculations as provided for in the test procedure. Examples:

(A) Energy saving features that are designed to operate when there are no door openings for long periods of time shall not be functional during the energy test.

(B) The defrost heater shall neither function nor turn off differently during the energy test than it would when in typical room conditions. Also, the product shall not recover differently during the defrost recovery period than it would in typical room conditions.

(C) Electric heaters that would normally operate at typical room conditions with door openings shall also operate during the energy test.

(D) Energy used during adaptive defrost shall continue to be measured and adjusted per the calculation provided in this test procedure.

(ii) DOE recognizes that there may be situations that the test procedures do not completely address. In such cases, a manufacturer must obtain a waiver in accordance with the relevant provisions of 10 CFR part 430 if:

(A) A product contains energy consuming components that operate differently during the prescribed testing than they would during representative average consumer use; and

(B) Applying the prescribed test to that product would evaluate it in a manner that is unrepresentative of its true energy consumption (thereby providing materially inaccurate comparative data).

(b) *Freezers.* (1) The estimated annual operating cost for freezers without an anti-sweat heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix B of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(2) The estimated annual operating cost for freezers with an anti-sweat heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix B of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(3) The estimated annual operating cost for any other specified cycle type for freezers shall be the product of the

following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the specified cycle type, determined according to section 6.2 of appendix B of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(4) The energy factor for freezers, expressed in cubic feet per kilowatt-hour per cycle, shall be:

(i) For freezers not having an anti-sweat heater switch, the quotient of:

(A) The adjusted net refrigerated volume in cubic feet, determined according to section 6.1 of appendix B of this subpart, divided by—

(B) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to 6.2 of appendix B of this subpart, with the resulting quotient then being rounded to the second decimal place; and

(ii) For freezers having an anti-sweat heater switch, the quotient of:

(A) The adjusted net refrigerated volume in cubic feet, determined according to section 6.1 of appendix B of this subpart, divided by—

(B) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix B of this subpart, with the resulting quotient then being rounded to the second decimal place.

(5) The annual energy use of all freezers, expressed in kilowatt-hours per year, shall be the following, rounded to the nearest kilowatt-hour per year:

(i) For freezers not having an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by the average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix B of this subpart; and

(ii) For freezers having an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix B of this subpart.

(6) Other useful measures of energy consumption for freezers shall be those measures the Secretary determines are likely to assist consumers in making purchasing decisions and are derived from the application of appendix B of this subpart.

(7) The following principles of interpretation shall be applied to the test procedure. The intent of the energy test procedure is to simulate typical room conditions (72 °F (22.2 °C)) with door openings by testing at 90 °F (32.2 °C) without door openings. Except for operating characteristics that are affected by ambient temperature (for example, compressor percent run time), the unit, when tested under this test procedure, shall operate in a manner equivalent to the unit's operation while in typical room conditions.

(i) The energy used by the unit shall be calculated when a calculation is provided by the test procedure. Energy consuming components that operate in typical room conditions (including as a result of door openings, or a function of humidity), and that are not excluded by this test procedure, shall operate in an equivalent manner during energy testing under this test procedure, or be accounted for by all calculations as provided for in the test procedure. Examples:

(A) Energy saving features that are designed to operate when there are no door openings for long periods of time shall not be functional during the energy test.

(B) The defrost heater shall neither function nor turn off differently during the energy test than it would when in typical room conditions. Also, the product shall not recover differently during the defrost recovery period than it would in typical room conditions.

(C) Electric heaters that would normally operate at typical room conditions with door openings shall also operate during the energy test.

(D) Energy used during adaptive defrost shall continue to be measured and adjusted per the calculation provided for in this test procedure.

(ii) DOE recognizes that there may be situations that the test procedures do not completely address. In such cases, a manufacturer must obtain a waiver in accordance with the relevant provisions of this part if:

(A) A product contains energy consuming components that operate differently during the prescribed testing than they would during representative average consumer use; and

(B) Applying the prescribed test to that product would evaluate it in a manner that is unrepresentative of its true energy consumption (thereby providing materially inaccurate comparative data).

* * * * *

(dd) *Coolers and combination cooler refrigeration products.* (1) The estimated annual operating cost for models without an anti-sweat heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(2) The estimated annual operating cost for models with an anti-sweat heater switch shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(3) The estimated annual operating cost for any other specified cycle type shall be the product of the following three factors, with the resulting product then being rounded to the nearest dollar per year:

(i) The representative average-use cycle of 365 cycles per year;

(ii) The average per-cycle energy consumption for the specified cycle type, determined according to section 6.2 of appendix A to this subpart; and

(iii) The representative average unit cost of electricity in dollars per kilowatt-hour as provided by the Secretary.

(4) The energy factor, expressed in cubic feet per kilowatt-hour per cycle, shall be:

(i) For models without an anti-sweat heater switch, the quotient of:

(A) The adjusted total volume in cubic feet, determined according to

section 6.1 of appendix A of this subpart, divided by—

(B) The average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart, with the resulting quotient then being rounded to the second decimal place; and

(ii) For models having an anti-sweat heater switch, the quotient of:

(A) The adjusted total volume in cubic feet, determined according to section 6.1 of appendix A of this subpart, divided by—

(B) Half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart, with the resulting quotient then being rounded to the second decimal place.

(5) The annual energy use, expressed in kilowatt-hours per year, shall be the following, rounded to the nearest kilowatt-hour per year:

(i) For models without an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by the average per-cycle energy consumption for the standard cycle in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart; and

(ii) For models having an anti-sweat heater switch, the representative average use cycle of 365 cycles per year multiplied by half the sum of the average per-cycle energy consumption for the standard cycle and the average per-cycle energy consumption for a test cycle type with the anti-sweat heater switch in the position set at the factory just before shipping, each in kilowatt-hours per cycle, determined according to section 6.2 of appendix A of this subpart.

(6) Other useful measures of energy consumption shall be those measures of energy consumption that the Secretary determines are likely to assist consumers in making purchasing decisions which are derived from the application of appendix A of this subpart.

(7) The following principles of interpretation shall be applied to the test procedure. The intent of the energy test procedure is to simulate operation in typical room conditions (72 °F (22.2 °C)) with door openings by testing at 90 °F (32.2 °C) ambient temperature without door openings. Except for operating characteristics that are affected by ambient temperature (for example, compressor percent run time), the unit, when tested under this test procedure, shall operate in a manner equivalent to the unit's operation while in typical room conditions.

(i) The energy used by the unit shall be calculated when a calculation is provided by the test procedure. Energy consuming components that operate in typical room conditions (including as a result of door openings, or a function of humidity), and that are not excluded by this test procedure, shall operate in an equivalent manner during energy testing under this test procedure, or be accounted for by all calculations as provided for in the test procedure. Examples:

(A) Energy saving features that are designed to operate when there are no door openings for long periods of time shall not be functional during the energy test.

(B) The defrost heater shall neither function nor turn off differently during the energy test than it would when in typical room conditions. Also, the product shall not recover differently during the defrost recovery period than it would in typical room conditions.

(C) Electric heaters that would normally operate at typical room conditions with door openings shall also operate during the energy test.

(D) Energy used during adaptive defrost shall continue to be measured and adjusted per the calculation provided for in this test procedure.

(ii) DOE recognizes that there may be situations that the test procedures do not completely address. In such cases, a manufacturer must obtain a waiver in accordance with the relevant provisions of this part if:

(A) A product contains energy consuming components that operate differently during the prescribed testing than they would during representative average consumer use; and

(B) Applying the prescribed test to that product would evaluate it in a manner that is unrepresentative of its true energy consumption (thereby providing materially inaccurate comparative data).

(8) For non-compressor models, ''compressor'' and ''compressor cycles'' as used in appendix A of this subpart shall be interpreted to mean ''refrigeration system'' and ''refrigeration system cycles,'' respectively.

■ 11. Appendix A to subpart B is amended by revising the heading, introductory text and sections 1, 2, 3, 4.2.1.1, 4.2.1.2, 5, 6, and 7 to read as follows:

Appendix A to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Refrigerators, Refrigerator-Freezers, and Miscellaneous Refrigeration Products

Note: For refrigerators and refrigerator-freezers, the rounding requirements specified in sections 5.3.e and 6.1 of this appendix are not required for use until the compliance date of any amended energy conservation standards for these products. For combination cooler refrigeration products, manufacturers must use the test procedures in this appendix for all representations of energy use starting on the compliance date of any energy conservation standards for these products. For all other miscellaneous refrigeration products (*e.g.* coolers), manufacturers must use the test procedures in this appendix for all representations of energy use on or after January 17, 2017.

1. Definitions

Section 3, *Definitions,* of HRF–1–2008 (incorporated by reference; see § 430.3) applies to this test procedure, except that the term ''wine chiller'' means ''cooler'' as defined in § 430.2 and the term ''wine chiller compartment'' means ''cooler compartment'' as defined in this appendix.

Anti-sweat heater means a device incorporated into the design of a product to prevent the accumulation of moisture on the exterior or interior surfaces of the cabinet.

Anti-sweat heater switch means a user-controllable switch or user interface which modifies the activation or control of anti-sweat heaters.

AS/NZS 4474.1:2007 means Australian/New Zealand Standard 4474.1:2007, Performance of household electrical appliances—Refrigerating appliances, Part 1: Energy consumption and performance. Only sections of AS/NZS 4474.1:2007 (incorporated by reference; see § 430.3) specifically referenced in this test procedure are part of this test procedure. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over AS/NZS 4474.1:2007.

Automatic defrost means a system in which the defrost cycle is automatically initiated and terminated, with resumption of normal refrigeration at the conclusion of the defrost operation. The system automatically prevents the permanent formation of frost on all refrigerated surfaces.

Automatic icemaker means a device that can be supplied with water without user intervention, either from a pressurized water supply system or by transfer from a water reservoir located inside the cabinet, that automatically produces, harvests, and stores ice in a storage bin, with means to automatically interrupt the harvesting operation when the ice storage bin is filled to a pre-determined level.

Cooler compartment means a refrigerated compartment designed exclusively for wine or other beverages within a consumer refrigeration product that is capable of maintaining compartment temperatures either (a) no lower than 39 °F (3.9 °C), or (b) in a range that extends no lower than 37 °F (2.8 °C) but at least as high as 60 °F (15.6 °C)

as determined according to § 429.14(d)(2) or § 429.61(d)(2) of this chapter.

Complete temperature cycle means a time period defined based upon the cycling of compartment temperature that starts when the compartment temperature is at a maximum and ends when the compartment temperature returns to an equivalent maximum (within 0.5 °F of the starting temperature), having in the interim fallen to a minimum and subsequently risen again to reach the second maximum. Alternatively, a complete temperature cycle can be defined to start when the compartment temperature is at a minimum and ends when the compartment temperature returns to an equivalent minimum (within 0.5 °F of the starting temperature), having in the interim risen to a maximum and subsequently fallen again to reach the second minimum.

Cycle means a 24-hour period for which the energy use of a product is calculated based on the consumer-activated compartment temperature controls being set to maintain the standardized temperatures (see section 3.2 of this appendix).

Cycle type means the set of test conditions having the calculated effect of operating a product for a period of 24 hours, with the consumer-activated controls, other than those that control compartment temperatures, set to establish various operating characteristics.

Defrost cycle type means a distinct sequence of control whose function is to remove frost and/or ice from a refrigerated surface. There may be variations in the defrost control sequence, such as the number of defrost heaters energized. Each such variation establishes a separate, distinct defrost cycle type. However, defrost achieved regularly during the compressor off-cycles by warming of the evaporator without active heat addition, although a form of automatic defrost, does not constitute a unique defrost cycle type for the purposes of identifying the test period in accordance with section 4 of this appendix.

HRF–1–2008 means AHAM Standard HRF–1–2008, Association of Home Appliance Manufacturers, Energy and Internal Volume of Refrigerating Appliances (2008), including Errata to Energy and Internal Volume of Refrigerating Appliances, Correction Sheet issued November 17, 2009. Only sections of HRF–1–2008 (incorporated by reference; see § 430.3) specifically referenced in this test procedure are part of this test procedure. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over HRF–1–2008.

Ice storage bin means a container in which ice can be stored.

Long-time automatic defrost means an automatic defrost system whose successive defrost cycles are separated by 14 hours or more of compressor operating time.

Multiple-compressor product means a consumer refrigeration product with more than one compressor.

Multiple refrigeration system product means a multiple-compressor product or a miscellaneous refrigeration product with more than one refrigeration system for which the operation of the systems is not coordinated. For non-compressor multiple refrigeration system products, ''multiple-compressor product'' as used in this appendix shall be interpreted to mean ''multiple refrigeration system product.''

Precooling means operating a refrigeration system before initiation of a defrost cycle to reduce one or more compartment temperatures significantly (more than 0.5 °F) below its minimum during stable operation between defrosts.

Recovery means operating a refrigeration system after the conclusion of a defrost cycle to reduce the temperature of one or more compartments to the temperature range that the compartment(s) exhibited during stable operation between defrosts.

Separate auxiliary compartment means a separate freezer, fresh food, or cooler compartment that is not the primary freezer, primary fresh food, or primary cooler compartment. Separate auxiliary compartments may also be convertible (*e.g.,* from fresh food to freezer). Separate auxiliary compartments may not be larger than the primary compartment of their type, but such size restrictions do not apply to separate auxiliary convertible compartments.

Special compartment means any compartment other than a butter conditioner or a cooler compartment, without doors directly accessible from the exterior, and with separate temperature control (such as crispers convertible to meat keepers) that is not convertible from the fresh food temperature range to the freezer temperature range.

Stable operation means operation after steady-state conditions have been achieved but excluding any events associated with defrost cycles. During stable operation the average rate of change of compartment temperatures must not exceed 0.042 °F (0.023 °C) per hour for all compartment temperatures. Such a calculation performed for compartment temperatures at any two times, or for any two periods of time comprising complete cycles, during stable operation must meet this requirement.

(a) If compartment temperatures do not cycle, the relevant calculation shall be the difference between the temperatures at two points in time divided by the difference, in hours, between those points in time.

(b) If compartment temperatures cycle as a result of compressor cycling or other cycling operation of any system component (*e.g.,* a damper, fan, heater, etc.), the relevant calculation shall be the difference between compartment temperature averages evaluated for the whole compressor cycles or complete temperature cycles divided by the difference, in hours, between either the starts, ends, or mid-times of the two cycles.

Stabilization period means the total period of time during which steady-state conditions are being attained or evaluated.

Standard cycle means the cycle type in which the anti-sweat heater control, when provided, is set in the highest energy-consuming position.

Through-the-door ice/water dispenser means a device incorporated within the cabinet, but outside the boundary of the refrigerated space, that delivers to the user on demand ice and may also deliver water from within the refrigerated space without opening an exterior door. This definition includes dispensers that are capable of dispensing ice and water or ice only.

Variable anti-sweat heater control means an anti-sweat heater control that varies the average power input of the anti-sweat heater(s) based on operating condition variable(s) and/or ambient condition variable(s).

Variable defrost control means an automatic defrost system in which successive defrost cycles are determined by an operating condition variable (or variables) other than solely compressor operating time. This includes any electrical or mechanical device performing this function. A control scheme that changes the defrost interval from a fixed length to an extended length (without any intermediate steps) is not considered a variable defrost control. A variable defrost control feature predicts the accumulation of frost on the evaporator and reacts accordingly. Therefore, the times between defrost must vary with different usage patterns and include a continuum of periods between defrosts as inputs vary.

2. Test Conditions

2.1 Ambient Temperature Measurement. Temperature measuring devices shall be shielded so that indicated temperatures are not affected by the operation of the condensing unit or adjacent units.

2.1.1 Ambient Temperature. Measure and record the ambient temperature at points located 3 feet (91.5 cm) above the floor and 10 inches (25.4 cm) from the center of the two sides of the unit under test. The ambient temperature shall be 90.0 ± 1 °F (32.2 ± 0.6 °C) during the stabilization period and the test period.

2.1.2 Ambient Temperature Gradient. The test room vertical ambient temperature gradient in any foot of vertical distance from 2 inches (5.1 cm) above the floor or supporting platform to a height of 1 foot (30.5 cm) above the top of the unit under test is not to exceed 0.5 °F per foot (0.9 °C per meter). The vertical ambient temperature gradient at locations 10 inches (25.4 cm) out from the centers of the two sides of the unit being tested is to be maintained during the test. To demonstrate that this requirement has been met, test data must include measurements taken using temperature sensors at locations 10 inches (25.4 cm) from the center of the two sides of the unit under test at heights of 2 inches (5.1 cm) and 36 inches (91.4 cm) above the floor or supporting platform and at a height of 1 foot (30.5 cm) above the unit under test.

2.1.3 Platform. A platform must be used if the floor temperature is not within 3 °F (1.7 °C) of the measured ambient temperature. If a platform is used, it is to have a solid top with all sides open for air circulation underneath, and its top shall extend at least 1 foot (30.5 cm) beyond each side and the front of the unit under test and extend to the wall in the rear.

2.2 Operational Conditions. The unit under test shall be installed and its operating conditions maintained in accordance with HRF–1–2008 (incorporated by reference; see § 430.3), sections 5.3.2 through 5.5.5.5 (excluding section 5.5.5.4). Exceptions and clarifications to the cited sections of HRF–1–

2008 are noted in sections 2.3 through 2.8 and 5.1 of this appendix.

2.3 Anti-Sweat Heaters. The anti-sweat heater switch is to be on during one test and off during a second test. In the case of a unit equipped with variable anti-sweat heater control, the standard cycle energy use shall be the result of the calculation described in section 6.2.5 of this appendix.

2.4 Conditions for Automatic Defrost Refrigerator-Freezers, Cooler-Refrigerator-Freezers and Cooler-Freezers. For these products, the freezer compartments shall not be loaded with any frozen food packages during testing. Cylindrical metallic masses of dimensions 1.12 ± 0.25 inches (2.9 ± 0.6 cm) in diameter and height shall be attached in good thermal contact with each temperature sensor within the refrigerated compartments. All temperature measuring sensor masses shall be supported by low-thermal-conductivity supports in such a manner to ensure that there will be at least 1 inch (2.5 cm) of air space separating the thermal mass from contact with any interior surface or hardware inside the cabinet. In case of interference with hardware at the sensor locations specified in section 5.1 of this appendix, the sensors shall be placed at the nearest adjacent location such that there will be a 1-inch air space separating the sensor mass from the hardware.

2.5 Conditions for All-Refrigerators and Cooler-All-Refrigerators. There shall be no load in the freezer compartment during the test.

2.6 The cabinet and its refrigerating mechanism shall be assembled and set up in accordance with the printed consumer instructions supplied with the cabinet. Set-up of the test unit shall not deviate from these instructions, unless explicitly required or allowed by this test procedure. Specific required or allowed deviations from such set-up include the following:

(a) Connection of water lines and installation of water filters are not required;

(b) Clearance requirements from surfaces of the product shall be as described in section 2.8 of this appendix;

(c) The electric power supply shall be as described in HRF–1–2008 (incorporated by reference; see § 430.3), section 5.5.1;

(d) Temperature control settings for testing shall be as described in section 3 of this appendix. Settings for convertible compartments and other temperature-controllable or special compartments shall be as described in section 2.7 of this appendix;

(e) The product does not need to be anchored or otherwise secured to prevent tipping during energy testing;

(f) All the product's chutes and throats required for the delivery of ice shall be free of packing, covers, or other blockages that may be fitted for shipping or when the icemaker is not in use; and

(g) Ice storage bins shall be emptied of ice.

For cases in which set-up is not clearly defined by this test procedure, manufacturers must submit a petition for a waiver (see section 7 of this appendix).

2.7 Compartments that are convertible (*e.g.,* from fresh food to freezer or cooler) shall be operated in the highest energy use position. A compartment may be considered to be convertible to a cooler compartment if it is capable of maintaining compartment temperatures at least as high as 55 °F (12.8 °C) and also capable of operating at storage temperatures less than 37 °F. For the special case of convertible separate auxiliary compartments, this means that the compartment shall be treated as a freezer compartment, a fresh food compartment, or a cooler compartment, depending on which of these represents the highest energy use.

Special compartments shall be tested with controls set to provide the coldest temperature. However, for special compartments in which temperature control is achieved using the addition of heat (including resistive electric heating, refrigeration system waste heat, or heat from any other source, but excluding the transfer of air from another part of the interior of the product) for any part of the controllable temperature range of that compartment, the product energy use shall be determined by averaging two sets of tests. The first set of tests shall be conducted with such special compartments at their coldest settings, and the second set of tests shall be conducted with such special compartments at their warmest settings. The requirements for the warmest or coldest temperature settings of this section do not apply to features or functions associated with temperature controls (such as fast chill compartments) that are initiated manually and terminated automatically within 168 hours.

Movable subdividing barriers that separate compartments shall be placed in the median position. If such a subdividing barrier has an even number of positions, the near-median position representing the smallest volume of the warmer compartment(s) shall be used.

2.8 Rear Clearance.

(a) General. The space between the lowest edge of the rear plane of the cabinet and a vertical surface (the test room wall or simulated wall) shall be the minimum distance in accordance with the manufacturer's instructions, unless other provisions of this section apply. The rear plane shall be considered to be the largest flat surface at the rear of the cabinet, excluding features that protrude beyond this surface, such as brackets or compressors.

(b) Maximum clearance. The clearance shall not be greater than 2 inches (51 mm) from the lowest edge of the rear plane to the vertical surface, unless the provisions of paragraph (c) of this section apply.

(c) If permanent rear spacers or other components that protrude beyond the rear plane extend further than the 2-inch (51 mm) distance, or if the highest edge of the rear plane is in contact with the vertical surface when the unit is positioned with the lowest edge of the rear plane at or further than the 2-inch (51 mm) distance from the vertical surface, the appliance shall be located with the spacers or other components protruding beyond the rear plane, or the highest edge of the rear plane, in contact with the vertical surface.

(d) Rear-mounted condensers. If the product has a flat rear-wall-mounted condenser (*i.e.,* a rear-wall-mounted condenser with all refrigerant tube centerlines within 0.25 inches (6.4 mm) of the condenser plane), and the area of the condenser plane represents at least 25% of the total area of the rear wall of the cabinet, then the spacing to the vertical surface may be measured from the lowest edge of the condenser plane.

2.9 Steady-State Condition. Steady-state conditions exist if the temperature measurements in all measured compartments taken at 4-minute intervals or less during a stabilization period are not changing at a rate greater than 0.042 °F (0.023 °C) per hour as determined by the applicable condition of paragraph (a) or (b) of this section.

(a) The average of the measurements during a 2-hour period if no cycling occurs or during a number of complete repetitive compressor cycles occurring through a period of no less than 2 hours is compared to the average over an equivalent time period with 3 hours elapsing between the two measurement periods.

(b) If paragraph (a) of this section cannot be used, the average of the measurements during a number of complete repetitive compressor cycles occurring through a period of no less than 2 hours and including the last complete cycle before a defrost period (or if no cycling occurs, the average of the measurements during the last 2 hours before a defrost period) are compared to the same averaging period before the following defrost period.

2.10 Products with Demand-Response Capability. Products that have a communication module for demand-response functions that is located within the cabinet shall be tested with the communication module in the configuration set at the factory just before shipping.

3. Test Control Settings

3.1 Model with No User-Operable Temperature Control. A test shall be performed to measure the compartment temperatures and energy use. A second test shall be performed with the temperature control electrically short circuited to cause the compressor to run continuously (or to cause the non-compressor refrigeration system to run continuously at maximum capacity).

3.2 Models with User-Operable Temperature Control. Testing shall be performed in accordance with the procedure in this section using the following standardized temperatures:

39 °F (3.9 °C) fresh food compartment temperature;

0 °F (−17.8 °C) freezer compartment temperature, except for freezer compartments in refrigerators and cooler-refrigerators, in which case testing would use a 15 °F (−9.4 °C) freezer compartment temperature; and

55 °F (12.8 °C) cooler compartment temperature.

For the purposes of comparing compartment temperatures with standardized temperatures, as described in sections 3.2.1 and 3.2.2 of this appendix, the freezer compartment temperature shall be as specified in section 5.1.4 of this appendix, the fresh food compartment temperature shall be as specified in section 5.1.3 of this appendix, and the cooler compartment temperature shall be as specified in section 5.1.5 of this appendix.

3.2.1 Temperature Control Settings and Tests to Use for Energy Use Calculations.

3.2.1.1 Setting Temperature Controls. For mechanical control systems, (a) knob detents shall be mechanically defeated if necessary to attain a median setting, and (b) the warmest and coldest settings shall correspond to the positions in which the indicator is aligned with control symbols indicating the warmest and coldest settings. For electronic control systems, the test shall be performed with all compartment temperature controls set at the average of the coldest and warmest settings; if there is no setting equal to this average, the setting closest to the average shall be used. If there are two such settings equally close to the average, the higher of these temperature control settings shall be used.

3.2.1.2 Test Sequence. A first test shall be performed with all compartment temperature controls set at their median position midway between their warmest and coldest settings. A second test shall be performed with all controls set at their warmest setting or all controls set at their coldest setting (not electrically or mechanically bypassed). For units with a single standardized temperature (*e.g.,* all-refrigerator or cooler), this setting shall be the appropriate setting that attempts to achieve compartment temperatures measured during the two tests that bound (*i.e.,* one is above and one is below) the standardized temperature. For other units, the second test shall be conducted with all controls at their coldest setting, unless all compartment temperatures measured during the first test are lower than the standardized temperatures, in which case the second test shall be conducted with all controls at their warmest setting. If any compartment is warmer than its standardized temperature for a test with all controls at their coldest position, the product receives no energy use rating and the manufacturer must submit a petition for a waiver (see section 7 of this appendix).

3.2.1.3 Temperature Setting Table. See Table 1 of this section for a general description of which settings to use and which test results to use in the energy consumption calculation for products with one, two, or three standardized temperatures.

TABLE 1—TEMPERATURE SETTINGS: GENERAL CHART FOR ALL PRODUCTS

First test		Second test		Energy calculation based on:
Setting	Results	Setting	Results	
Mid for all compartments	All compartments low	Warm for all compartments.	All compartments low	Second Test Only.
			One or more compartments high.	First and Second Test.
	One or more compartments high.	Cold for all compartments.	All compartments low	First and Second Test.
			One or more compartments high.	No Energy Use Rating.

3.2.2 Alternatively, a first test may be performed with all temperature controls set at their warmest setting. If all compartment temperatures are below the appropriate standardized temperatures, then the result of this test alone will be used to determine energy consumption. If this condition is not met, then the unit shall be tested in accordance with section 3.2.1 of this appendix.

3.2.3 Temperature Settings for Separate Auxiliary Convertible Compartments. For separate auxiliary convertible compartments tested as freezer compartments, the median setting shall be within 2 °F (1.1 °C) of the standardized freezer compartment temperature, and the warmest setting shall be at least 5 °F (2.8 °C) warmer than the standardized temperature. For separate auxiliary convertible compartments tested as fresh food compartments, the median setting shall be within 2 °F (1.1 °C) of 39 °F (3.9 °C), the coldest setting shall be below 34 °F (1.1 °C), and the warmest setting shall be above 43 °F (6.1 °C). For separate auxiliary convertible compartments tested as cooler compartments, the median setting shall be within 2 °F (1.1 °C) of 55 °F (12.8 °C), and the coldest setting shall be below 50 °F (10.0 °C). For compartments where control settings are not expressed as particular temperatures, the measured temperature of the convertible compartment rather than the settings shall meet the specified criteria.

3.3 Optional Test for Models with Two Compartments and User-Operable Controls. As an alternative to section 3.2 of this appendix, perform three tests such that the set of tests meets the ''minimum requirements for interpolation'' of AS/NZS 4474.1:2007 (incorporated by reference; see § 430.3) appendix M, section M3, paragraphs (a) through (c) and as illustrated in Figure M1. The target temperatures t_{xA} and t_{xB} defined in section M4(a)(i) of AS/NZ 4474.1:2007 shall be the standardized temperatures defined in section 3.2 of this appendix.

* * * * *

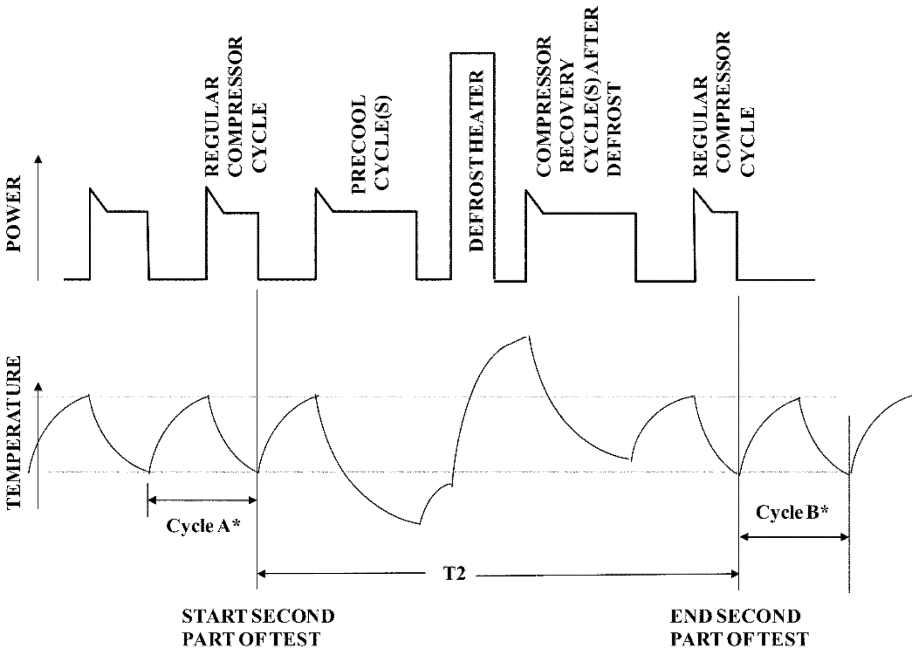
4. Test Period

* * * * *

4.2.1.1 Cycling Compressor System. For a system with a cycling compressor, the second part of the test starts at the termination of the last regular compressor ''on'' cycle. The average compartment temperatures measured from the termination of the previous compressor ''on'' cycle to the termination of the last regular compressor ''on'' cycle must both be within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. If any compressor cycles occur prior to the defrost heater being energized that cause the average temperature in any compartment to deviate from its average temperature for the first part of the test by more than 0.5 °F (0.3 °C), these compressor cycles are not considered regular compressor cycles and must be included in the second part of the test. As an example, a ''precooling'' cycle, which is an extended compressor cycle that lowers the temperature(s) of one or more compartments prior to energizing the defrost heater, must be included in the second part of the test. The test period for the second part of the test ends at the termination of the first regular compressor ''on'' cycle after compartment temperatures have fully recovered to their stable conditions. The average temperatures of the compartments measured from this termination of the first regular compressor ''on'' cycle until the termination of the next regular compressor ''on'' cycle must both be within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. See Figure 1 of this section. Note that Figure 1 illustrates the concepts of precooling and recovery but does not represent all possible defrost cycles.

Figure 1

Long-time Automatic Defrost Diagram for Cycling Compressors

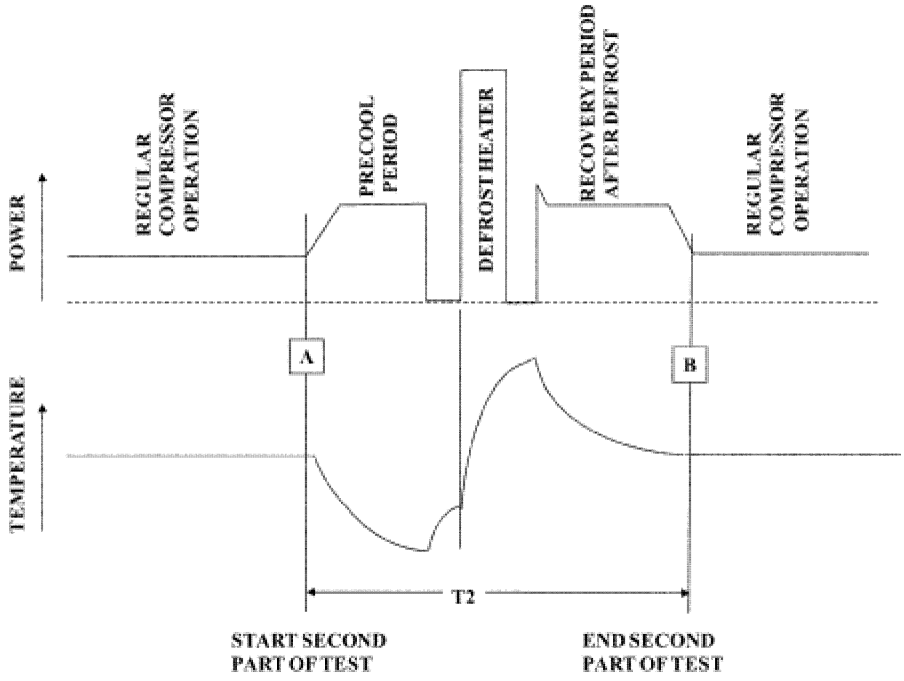


***Average compartment temperature(s) during cycles A & B must be within 0.5 °F of the average temperature(s) for the first part of the test.**

4.2.1.2 Non-cycling Compressor System. For a system with a non-cycling compressor, the second part of the test starts at a time before defrost during stable operation when compartment temperatures are within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. The second part stops at a time after defrost during stable operation when the compartment temperatures are within 0.5 °F (0.3 °C) of their average temperatures measured for the first part of the test. See Figure 2 of this section.

Figure 2

Long-time Automatic Defrost Diagram for Non-Cycling Compressors



*Average compartment temperature(s) at times A & B must be within 0.5 °F of the average temperature(s) for the first part of the test.

* * * * *

5. Test Measurements

5.1 Temperature Measurements. (a) Temperature measurements shall be made at the locations prescribed in HRF–1–2008 (incorporated by reference; see § 430.3) Figure 5.1 for cooler and fresh food compartments and Figure 5.2 for freezer compartments and shall be accurate to within ±0.5 °F (0.3 °C). No freezer temperature measurements need be taken in an all-refrigerator or cooler-all-refrigerator.

(b) If the interior arrangements of the unit under test do not conform with those shown in Figures 5.1 or 5.2 of HRF–1–2008, as appropriate, the unit must be tested by relocating the temperature sensors from the locations specified in the figures to avoid interference with hardware or components within the unit, in which case the specific locations used for the temperature sensors shall be noted in the test data records maintained by the manufacturer in accordance with 10 CFR 429.71, and the certification report shall indicate that non-standard sensor locations were used. If any temperature sensor is relocated by any amount from the location prescribed in Figure 5.1 or 5.2 of HRF–1– 2008 in order to maintain a minimum 1-inch air space from adjustable shelves or other components that could be relocated by the consumer, except in cases in which the Figures prescribe a temperature sensor location within 1 inch of a shelf or similar feature (*e.g.,* sensor T_3 in Figure 5.1), this constitutes a relocation of temperature sensors that must be recorded in the test data and reported in the certification report as described in this paragraph (b).

5.1.1 Measured Temperature. The measured temperature of a compartment is the average of all sensor temperature readings taken in that compartment at a particular point in time. Measurements shall be taken at regular intervals not to exceed 4 minutes. Measurements for multiple refrigeration system products shall be taken at regular intervals not to exceed one minute.

5.1.2 Compartment Temperature. The compartment temperature for each test period shall be an average of the measured temperatures taken in a compartment during the test period as defined in section 4 of this appendix. For long-time automatic defrost models, compartment temperatures shall be those measured in the first part of the test period specified in section 4.2.1 of this appendix. For models with variable defrost controls, compartment temperatures shall be those measured in the first part of the test period specified in section 4.2.2 of this appendix. For models with automatic defrost that is neither long-time nor variable defrost, the compartment temperature shall be an average of the measured temperatures taken in a compartment during a stable period of compressor operation that:

(a) Includes no defrost cycles or events associated with a defrost cycle, such as precooling or recovery;

(b) Is no less than three hours in duration; and

(c) Includes two or more whole compressor cycles. If the compressor does not cycle, the stable period used for the temperature average shall be three hours in duration.

5.1.3 Fresh Food Compartment Temperature. The fresh food compartment temperature shall be calculated as:

$$TR = \frac{\sum_{i=1}^{R}(TR_i) \times (VR_i)}{\sum_{i=1}^{R}(VR_i)}$$

Where:

R is the total number of applicable fresh food compartments, including the primary fresh food compartment and any separate auxiliary fresh food compartments (including separate auxiliary convertible compartments tested as fresh food compartments in accordance with section 2.7 of this appendix);

TR_i is the compartment temperature of fresh food compartment ''i'' determined in accordance with section 5.1.2 of this appendix; and

VR_i is the volume of fresh food compartment ''i.''

5.1.4 Freezer Compartment Temperature. The freezer compartment temperature shall be calculated as:

$$TF = \frac{\sum_{i=1}^{F}(TF_i) \times (VF_i)}{\sum_{i=1}^{F}(VF_i)}$$

Where:

F is the total number of applicable freezer compartments, which include the primary freezer compartment and any number of separate auxiliary freezer compartments (including separate auxiliary convertible compartments tested as freezer compartments in

accordance with section 2.7 of this appendix);

TF_i is the compartment temperature of freezer compartment ''i'' determined in accordance with section 5.1.2 of this appendix; and

VF_i is the volume of freezer compartment ''i''.

5.1.5 Cooler Compartment Temperature. The cooler compartment temperature shall be calculated as:

$$TC = \frac{\sum_{i=1}^{C}(TC_i) \times (VC_i)}{\sum_{i=1}^{C}(VC_i)}$$

Where:

C is the total number of applicable cooler compartments (including separate auxiliary convertible compartments tested as cooler compartments in accordance with section 2.7 of this appendix);

TC_i is the compartment temperature of cooler compartment ''i'' determined in accordance with section 5.1.2 of this appendix; and

VC_i is the volume of cooler compartment ''i.''

5.2 Energy Measurements.

5.2.1 Per-Day Energy Consumption. The energy consumption in kilowatt-hours per day, ET, for each test period shall be the energy expended during the test period as specified in section 4 of this appendix adjusted to a 24-hour period. The adjustment shall be determined as follows.

5.2.1.1 Non-Automatic Defrost and Automatic Defrost. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$ET = (EP \times 1440 \times K)/T$

Where:

ET = test cycle energy expended in kilowatt-hours per day;

EP = energy expended in kilowatt-hours during the test period;

T = length of time of the test period in minutes; and

1440 = conversion factor to adjust to a 24-hour period in minutes per day.

K = dimensionless correction factor of 1.0 for refrigerators and refrigerator-freezers; and 0.55 for coolers and combination cooler refrigeration products to adjust for average household usage.

5.2.1.2 Long-time Automatic Defrost. If the two-part test method is used, the energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$ET = (1440 \times K \times EP1/T1) + (EP2 - (EP1 \times T2/T1)) \times K \times (12/CT)$

Where:

ET, 1440, and K are defined in section 5.2.1.1 of this appendix;

EP1 = energy expended in kilowatt-hours during the first part of the test;

EP2 = energy expended in kilowatt-hours during the second part of the test;

T1 and T2 = length of time in minutes of the first and second test parts respectively;

CT = defrost timer run time or compressor run time between defrosts in hours required to cause it to go through a complete cycle, rounded to the nearest tenth of an hour; and

12 = factor to adjust for a 50-percent run time of the compressor in hours per day.

5.2.1.3 Variable Defrost Control. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$ET = (1440 \times K \times EP1/T1) + (EP2 - (EP1 \times T2/T1)) \times K \times (12/CT)$,

Where:

1440 and K are defined in section 5.2.1.1 of this appendix and EP1, EP2, T1, T2, and 12 are defined in section 5.2.1.2 of this appendix;

$CT = (CT_L \times CT_M)/(F \times (CT_M - CT_L) + CT_L)$;

CT_L = the shortest compressor run time between defrosts used in the variable defrost control algorithm (greater than or equal to 6 but less than or equal to 12 hours), or the shortest compressor run time between defrosts observed for the test (if it is shorter than the shortest run time used in the control algorithm and is greater than 6 hours), or 6 hours (if the shortest observed run time is less than 6 hours), in hours rounded to the nearest tenth of an hour;

CT_M = maximum compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than CT_L but not more than 96 hours);

F = ratio of per day energy consumption in excess of the least energy and the maximum difference in per-day energy consumption and is equal to 0.20.

For variable defrost models with no values for CT_L and CT_M in the algorithm, the default values of 6 and 96 shall be used, respectively.

5.2.1.4 Multiple Compressor Products with Automatic Defrost. For multiple compressor products, the two-part test method in section 4.2.3.4 of this appendix must be used. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = (1440 \times K \times EP1/T1) + \sum_{i=1}^{D}\left[\left(EP2_i - (EP1 \times T2_i/T1)\right) \times K \times (12/CT_i)\right]$$

Where:

1440 and K are defined in section 5.2.1.1 of this appendix and EP1, T1, and 12 are defined in section 5.2.1.2 of this appendix;

i = a variable that can equal 1, 2, or more that identifies each individual compressor system that has automatic defrost;

D = the total number of compressor systems with automatic defrost.

$EP2_i$ = energy expended in kilowatt-hours during the second part of the test for compressor system i;

$T2_i$ = length of time in minutes of the second part of the test for compressor system i;

CT_i = the compressor run time between defrosts for compressor system i in hours rounded to the nearest tenth of an hour, for long-time automatic defrost control equal to a fixed time in hours, and for variable defrost control equal to:

$(CT_{Li} \times CT_{Mi})/(F \times (CT_{Mi} - CT_{Li}) + CT_{Li})$;

Where:

CT_{Li} = for compressor system i, the shortest compressor run time between defrosts used in the variable defrost control algorithm (greater than or equal to 6 but less than or equal to 12 hours), or the shortest compressor run time between defrosts observed for the test (if it is shorter than the shortest run time used in the control algorithm and is greater than 6 hours), or 6 hours (if the shortest observed run time is less than 6 hours), in hours rounded to the nearest tenth of an hour;

CT_{Mi} = for compressor system i, the maximum compressor run time between defrosts in hours rounded to the nearest tenth of an hour (greater than CT_{Li} but not more than 96 hours);

F = default defrost energy consumption factor, equal to 0.20.

For variable defrost models with no values for CT_{Li} and CT_{Mi} in the algorithm, the default values of 6 and 96 shall be used, respectively.

5.2.1.5 Long-time or Variable Defrost Control for Systems with Multiple Defrost Cycle Types. The energy consumption in kilowatt-hours per day shall be calculated equivalent to:

$$ET = \left(1440 \times K \times \frac{EP1}{T1}\right) + \sum_{i=1}^{D}\left[\left(EP2_i - \left(EP1 \times \frac{T2_i}{T1}\right)\right) \times K \times \left(\frac{12}{CT_i}\right)\right]$$

Where:

1440 and K are defined in section 5.2.1.1 of this appendix and EP1, T1, and 12 are defined in section 5.2.1.2 of this appendix;

i is a variable that can equal 1, 2, or more that identifies the distinct defrost cycle types applicable for the product;

$EP2_i$ = energy expended in kilowatt-hours during the second part of the test for defrost cycle type i;

$T2_i$ = length of time in minutes of the second part of the test for defrost cycle type i;

CT_i is the compressor run time between instances of defrost cycle type i, for long-time automatic defrost control equal to a fixed time in hours rounded to the nearest tenth of an hour, and for variable defrost control equal to:

$(CT_{Li} \times CT_{Mi})/(F \times (CT_{Mi} - CT_{Li}) + CT_{Li})$;

CT_{Li} = least or shortest compressor run time between instances of defrost cycle type i in hours rounded to the nearest tenth of an hour (CT_L for the defrost cycle type with the longest compressor run time between defrosts must be greater than or equal to 6 but less than or equal to 12 hours);

CT_{Mi} = maximum compressor run time between instances of defrost cycle type i in hours rounded to the nearest tenth of an hour (greater than CT_{Li} but not more than 96 hours);

For cases in which there are more than one fixed CT value (for long-time defrost models) or more than one CT_M and/or CT_L value (for variable defrost models) for a given defrost cycle type, an average fixed CT value or average CT_M and CT_L values shall be selected for this cycle type so that 12 divided by this value or values is the frequency of occurrence of the defrost cycle type in a 24 hour period, assuming 50% compressor run time.

F = default defrost energy consumption factor, equal to 0.20.

For variable defrost models with no values for CT_{Li} and CT_{Mi} in the algorithm, the default values of 6 and 96 shall be used, respectively.

D is the total number of distinct defrost cycle types.

5.3 Volume Measurements. (a) The unit's total refrigerated volume, VT, shall be measured in accordance with HRF–1–2008, (incorporated by reference; see § 430.3), section 3.30 and sections 4.2 through 4.3. The measured volume shall include all spaces within the insulated volume of each compartment except for the volumes that must be deducted in accordance with section 4.2.2 of HRF–1–2008, as provided in paragraph (b) of this section, and be calculated equivalent to:

VT = VF + VFF + VC

Where:

VT = total refrigerated volume in cubic feet,

VF = freezer compartment volume in cubic feet,

VFF = fresh food compartment volume in cubic feet, and

VC = cooler compartment volume in cubic feet.

(b) The following component volumes shall not be included in the compartment volume measurements: Icemaker compartment insulation (*e.g.,* insulation isolating the icemaker compartment from the fresh food compartment of a product with a bottom-mounted freezer with through-the-door ice service), fountain recess, dispenser insulation, and ice chute (if there is a plug, cover, or cap over the chute per Figure 4–2 of HRF–1–2008). The following component volumes shall be included in the compartment volume measurements: Icemaker auger motor (if housed inside the insulated space of the cabinet), icemaker kit, ice storage bin, and ice chute (up to the dispenser flap, if there is no plug, cover, or cap over the ice chute per Figure 4–3 of HRF–1–2008).

(c) Total refrigerated volume is determined by physical measurement of the test unit. Measurements and calculations used to determine the total refrigerated volume shall be retained as part of the test records underlying the certification of the basic model in accordance with 10 CFR 429.71.

(d) Compartment classification shall be based on subdivision of the refrigerated volume into zones separated from each other by subdividing barriers: No evaluated compartment shall be a zone of a larger compartment unless the zone is separated from the remainder of the larger compartment by subdividing barriers; if there are no such subdividing barriers within the larger compartment, the larger compartment must be evaluated as a single compartment rather than as multiple compartments. If the cabinet contains a movable subdividing barrier, it must be placed as described in section 2.7 of this appendix.

(e) Freezer, fresh food, and cooler compartment volumes shall be calculated and recorded to the nearest 0.01 cubic foot. Total refrigerated volume shall be calculated and recorded to the nearest 0.1 cubic foot.

6. Calculation of Derived Results From Test Measurements

6.1 Adjusted Total Volume. The adjusted total volume of each tested unit must be determined based upon the volume measured in section 5.3 of this appendix using the following calculations. Where volume measurements for the freezer, fresh food, and cooler compartment are recorded in liters, the measured volume must be converted to cubic feet and rounded to the nearest 0.01 cubic foot prior to calculating the adjusted volume. Adjusted total volume shall be calculated and recorded to the nearest 0.1 cubic foot.

6.1.1 Refrigerators, Coolers, and Cooler-Refrigerators. The adjusted total volume, AV, for refrigerators or cooler-refrigerators under test, shall be defined as:

AV = (VF × CR) + VFF + VC

Where:

AV = adjusted total volume in cubic feet;

VF, VFF, and VC are defined in section 5.3 of this appendix;

CR = dimensionless adjustment factor for freezer compartments of 1.00 for all-refrigerators and cooler-all-refrigerators, or 1.47 for other types of refrigerators and cooler-refrigerators; and

6.1.2 Refrigerator-Freezers, Cooler-Refrigerator-Freezers, and Cooler-Freezers. The adjusted total volume, AV, for refrigerator-freezers, cooler-refrigerator-freezers, and cooler-freezers under test shall be calculated as follows:

AV = (VF × CRF) + VFF + VC

Where:

VF, VFF, and VC are defined in section 5.3 and AV is defined in section 6.1.1 of this appendix;

CRF = dimensionless adjustment factor for freezer compartments of 1.76; and

6.2 Average Per-Cycle Energy Consumption. The average per-cycle energy consumption for a cycle type, E, is expressed in kilowatt-hours per cycle to the nearest one hundredth (0.01) kilowatt-hour and shall be calculated according to the sections below.

6.2.1 All-Refrigerator Models. The average per-cycle energy consumption shall depend upon the temperature attainable in the fresh food compartment as shown in section 6.2.1.1 of this appendix.

6.2.1.1 If the fresh food compartment temperature is always below 39.0 °F (3.9 °C), the average per-cycle energy consumption shall be equivalent to:

E = ET1

Where:

ET is defined in section 5.2.1 of this appendix; and

The number 1 indicates the test during which the highest fresh food compartment temperature is measured.

6.2.1.2 If the conditions of section 6.2.1.1 of this appendix do not apply, the average per-cycle energy consumption shall be equivalent to:

E = ET1 + ((ET2 − ET1) × (39.0 − TR1)/(TR2 − TR1))

Where:

ET is defined in section 5.2.1 of this appendix;

TR = fresh food compartment temperature determined according to section 5.1.3 of this appendix in degrees F;

The numbers 1 and 2 indicate measurements taken during the two tests to be used to calculate energy consumption, as specified in section 3 of this appendix; and

39.0 = standardized fresh food compartment temperature in degrees F.

6.2.2 Coolers. The average per-cycle energy consumption shall depend upon the temperature attainable in the cooler compartment as shown in section 6.2.2.1 of this appendix.

6.2.2.1 If the cooler compartment temperature is always below 55.0 °F (12.8 °C), the average per-cycle energy consumption shall be equivalent to:

E = ET1

Where:

ET is defined in section 5.2.1 of this appendix; and

The number 1 indicates the test during which the highest cooler compartment temperature is measured.

6.2.2.2 If the conditions of section 6.2.2.1 of this appendix do not apply, the average per-cycle energy consumption shall be equivalent to:

$E = ET1 + ((ET2 - ET1) \times (55.0 - TC1)/(TC2 - TC1))$

Where:

ET is defined in section 5.2.1 of this appendix;

TC = cooler compartment temperature determined according to section 5.1.5 of this appendix in degrees F;

The numbers 1 and 2 are defined in section 6.2.1.2 of this appendix; and

55.0 = standardized cooler compartment temperature in degrees F.

6.2.3 Refrigerators and Refrigerator-Freezers. The average per-cycle energy consumption shall be defined in one of the following ways as applicable.

6.2.3.1 If the fresh food compartment temperature is always below 39 °F (3.9 °C) and the freezer compartment temperature is always below 15 °F (−9.4 °C) in both tests of a refrigerator or always below 0 °F (−17.8 °C) in both tests of a refrigerator-freezer, the average per-cycle energy consumption shall be:

E = ET1 + IET

Where:

ET is defined in section 5.2.1 of this appendix;

IET, expressed in kilowatt-hours per cycle, equals 0.23 for a product with an automatic icemaker and otherwise equals 0 (zero); and

The number 1 indicates the test during which the highest freezer compartment temperature was measured.

6.2.3.2 If the conditions of section 6.2.3.1 of this appendix do not apply, the average per-cycle energy consumption shall be defined by the higher of the two values calculated by the following two formulas:

$E = ET1 + ((ET2 - ET1) \times (39.0 - TR1)/(TR2 - TR1)) + IET$

and

$E = ET1 + ((ET2 - ET1) \times (k - TF1)/(TF2 - TF1)) + IET$

Where:

ET is defined in section 5.2.1 of this appendix;

IET is defined in section 6.2.3.1 of this appendix;

TR and the numbers 1 and 2 are defined in section 6.2.1.2 of this appendix;

TF = freezer compartment temperature determined according to section 5.1.4 of this appendix in degrees F;

39.0 is a specified fresh food compartment temperature in degrees F; and

k is a constant 15.0 for refrigerators or 0.0 for refrigerator-freezers, each being a standardized freezer compartment temperature in degrees F.

6.2.4 Combination Cooler Refrigeration Products. The average per-cycle energy consumption shall be defined in one of the following ways as applicable.

6.2.4.1 If the compartment temperatures are always below their compartments' standardized temperatures as defined in section 3.2 of this appendix (the fresh food compartment temperature is at or below 39 °F (3.9 °C); the cooler compartment temperature is at or below 55 °F (12.8 °C); and the freezer compartment temperature is at or below 15 °F (−9.4 °C) for a cooler-refrigerator, or the freezer compartment temperature is at or below 0 °F (−17.8 °C) for a cooler-refrigerator-freezer or cooler-freezer), the average per-cycle energy consumption shall be:

E = ET1 + IET

Where:

ET is defined in section 5.2.1 of this appendix;

IET is defined in section 6.2.3.1 of this appendix;

The number 1 indicates the test during which the highest freezer compartment temperature is measured. If the product has no freezer compartment, the number 1 indicates the test during which the highest fresh food compartment temperature is measured.

6.2.4.2 If the conditions of section 6.2.4.1 of this appendix do not apply, the average per-cycle energy consumption shall be defined by the highest of the two or three values calculated by the following three formulas:

$E = (ET1 + ((ET2 - ET1) \times (39.0 - TR1)/(TR2 - TR1)) + IET$ if the product has a fresh food compartment;

$E = (ET1 + ((ET2 - ET1) \times (k - TF1)/(TF2 - TF1)) + IET$ if the product has a freezer compartment; and

$E = (ET1 + ((ET2 - ET1) \times (55.0 - TC1)/(TC2 - TC1)) + IET$

Where:

ET is defined in section 5.2.1 of this appendix;

IET is defined in section 6.2.3.1 of this appendix;

TR and the numbers 1 and 2 are defined in section 6.2.1.2 of this appendix;

TF is defined in section 6.2.3.2 of this appendix;

TC is defined in section 6.2.2.2 of this appendix;

39.0 is a specified fresh food compartment temperature in degrees F;

k is a constant 15.0 for cooler-refrigerators or 0.0 for cooler-refrigerator-freezers and cooler-freezers, each being a standardized freezer compartment temperature in degrees F; and

55.0 is a specified cooler compartment temperature in degrees F.

6.2.5 Variable Anti-Sweat Heater Models. The standard cycle energy consumption of a model with a variable anti-sweat heater control (E_{std}), expressed in kilowatt-hours per day, shall be calculated equivalent to:

E_{std} = E + (Correction Factor) where E is determined by sections 6.2.1, 6.2.2, 6.2.3, or 6.2.4 of this appendix, whichever is appropriate, with the anti-sweat heater switch in the ''off'' position or, for a product without an anti-sweat heater switch, the anti-sweat heater in its lowest energy use state.

Correction Factor = (Anti-sweat Heater Power × System-loss Factor) × (24 hrs/1 day) × (1 kW/1000 W)

Where:

Anti-sweat Heater Power = 0.034 * (Heater Watts at 5%RH)
+ 0.211 * (Heater Watts at 15%RH)
+ 0.204 * (Heater Watts at 25%RH)
+ 0.166 * (Heater Watts at 35%RH)
+ 0.126 * (Heater Watts at 45%RH)
+ 0.119 * (Heater Watts at 55%RH)
+ 0.069 * (Heater Watts at 65%RH)
+ 0.047 * (Heater Watts at 75%RH)
+ 0.008 * (Heater Watts at 85%RH)
+ 0.015 * (Heater Watts at 95%RH)

Heater Watts at a specific relative humidity = the nominal watts used by all heaters at that specific relative humidity, 72 °F (22.2 °C) ambient, and DOE reference temperatures of fresh food (FF) average temperature of 39 °F (3.9 °C) and freezer (FZ) average temperature of 0 °F (−17.8 °C).

System-loss Factor = 1.3.

7. Test Procedure Waivers

To the extent that the procedures contained in this appendix do not provide a means for determining the energy consumption of a basic model, a manufacturer must obtain a waiver under § 430.27 to establish an acceptable test procedure for each such basic model. Such instances could, for example, include situations where the test set-up for a particular basic model is not clearly defined by the provisions of section 2 of this appendix. For details regarding the criteria and procedures for obtaining a waiver, please refer to § 430.27.

Appendix A1—[Removed]

■ 12. Appendix A1 to subpart B is removed.

■ 13. Appendix B to subpart B is amended by revising the introductory text and sections 1, 2.5, 5.1.b, 5.1.3, 5.3, 6.1, 6.2.1, 6.2.2, and 7 to read as follows:

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

Note: For freezers, the rounding requirements specified in sections 5.3.e and 6.1 of this appendix are not required for use until the compliance date of any amended energy conservation standards for these products.

1. Definitions

Section 3, Definitions, of HRF–1–2008 (incorporated by reference; see § 430.3) applies to this test procedure.

Adjusted total volume means the product of the freezer volume as defined in HRF–1–2008 (incorporated by reference; see § 430.3) in cubic feet multiplied by an adjustment factor.

Anti-sweat heater means a device incorporated into the design of a freezer to prevent the accumulation of moisture on exterior or interior surfaces of the cabinet.

Anti-sweat heater switch means a user-controllable switch or user interface which modifies the activation or control of anti-sweat heaters.

Automatic defrost means a system in which the defrost cycle is automatically initiated and terminated, with resumption of normal refrigeration at the conclusion of defrost operation. The system automatically prevents the permanent formation of frost on all refrigerated surfaces. Nominal refrigerated

food temperatures are maintained during the operation of the automatic defrost system.

Automatic icemaker means a device that can be supplied with water without user intervention, either from a pressurized water supply system or by transfer from a water reservoir that automatically produces, harvests, and stores ice in a storage bin, with means to automatically interrupt the harvesting operation when the ice storage bin is filled to a pre-determined level.

Complete temperature cycle means a time period defined based upon the cycling of compartment temperature that starts when the compartment temperature is at a maximum and ends when the compartment temperature returns to an equivalent maximum (within 0.5 °F of the starting temperature), having in the interim fallen to a minimum and subsequently risen again to reach the second maximum. Alternatively, a complete temperature cycle can be defined to start when the compartment temperature is at a minimum and end when the compartment temperature returns to an equivalent minimum (within 0.5 °F of the starting temperature), having in the interim risen to a maximum and subsequently fallen again to reach the second minimum.

Cycle means the period of 24 hours for which the energy use of a freezer is calculated as though the consumer-activated compartment temperature controls were set to maintain the standardized temperature (see section 3.2 of this appendix).

Cycle type means the set of test conditions having the calculated effect of operating a freezer for a period of 24 hours with the consumer-activated controls other than the compartment temperature control set to establish various operating characteristics.

HRF–1–2008 means AHAM Standard HRF–1–2008, Association of Home Appliance Manufacturers, Energy and Internal Volume of Refrigerating Appliances (2008), including Errata to Energy and Internal Volume of Refrigerating Appliances, Correction Sheet issued November 17, 2009. Only sections of HRF–1–2008 (incorporated by reference; see § 430.3) specifically referenced in this test procedure are part of this test procedure. In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over HRF–1–2008.

Ice storage bin means a container in which ice can be stored.

Long-time automatic defrost means an automatic defrost system where successive defrost cycles are separated by 14 hours or more of compressor operating time.

Precooling means operating a refrigeration system before initiation of a defrost cycle to reduce one or more compartment temperatures significantly (more than 0.5 °F) below its minimum during stable operation between defrosts.

Quick freeze means an optional feature on freezers that is initiated manually. It bypasses the thermostat control and operates continually until the feature is terminated either manually or automatically.

Recovery means operating a refrigeration system after the conclusion of a defrost cycle to reduce the temperature of one or more compartments to the temperature range that the compartment(s) exhibited during stable operation between defrosts.

Separate auxiliary compartment means a freezer compartment other than the primary freezer compartment of a freezer having more than one compartment. Access to a separate auxiliary compartment is through a separate exterior door or doors rather than through the door or doors of another compartment. Separate auxiliary freezer compartments may not be larger than the primary freezer compartment.

Special compartment means any compartment without doors directly accessible from the exterior, and with separate temperature control that is not convertible from fresh food temperature range to freezer temperature range.

Stabilization period means the total period of time during which steady-state conditions are being attained or evaluated.

Stable operation means operation after steady-state conditions have been achieved but excluding any events associated with defrost cycles. During stable operation the average rate of change of compartment temperature must not exceed 0.042 °F (0.023 °C) per hour. Such a calculation performed for compartment temperatures at any two times, or for any two periods of time comprising complete cycles, during stable operation must meet this requirement.

(a) If compartment temperatures do not cycle, the relevant calculation shall be the difference between the temperatures at two points in time divided by the difference, in hours, between those points in time.

(b) If compartment temperatures cycle as a result of compressor cycling or other cycling operation of any system component (*e.g.,* a damper, fan, or heater), the relevant calculation shall be the difference between compartment temperature averages evaluated for whole compressor cycles or complete temperature cycles divided by the difference, in hours, between either the starts, ends, or mid-times of the two cycles.

Standard cycle means the cycle type in which the anti-sweat heater switch, when provided, is set in the highest energy-consuming position.

Through-the-door ice/water dispenser means a device incorporated within the cabinet, but outside the boundary of the refrigerated space, that delivers to the user on demand ice and may also deliver water from within the refrigerated space without opening an exterior door. This definition includes dispensers that are capable of dispensing ice and water or ice only.

Variable defrost control means an automatic defrost system in which successive defrost cycles are determined by an operating condition variable (or variables) other than solely compressor operating time. This includes any electrical or mechanical device performing this function. A control scheme that changes the defrost interval from a fixed length to an extended length (without any intermediate steps) is not considered a variable defrost control. A variable defrost control feature should predict the accumulation of frost on the evaporator and react accordingly. Therefore, the times between defrost must vary with different usage patterns and include a continuum of lengths of time between defrosts as inputs vary.

2. Test Conditions

* * * * *

2.5 Special compartments shall be tested with controls set to provide the coldest temperature. However, for special compartments in which temperature control is achieved using the addition of heat (including resistive electric heating, refrigeration system waste heat, or heat from any other source, but excluding the transfer of air from another part of the interior of the product) for any part of the controllable temperature range of that compartment, the product energy use shall be determined by averaging two sets of tests. The first set of tests shall be conducted with such special compartments at their coldest settings, and the second set of tests shall be conducted with such special compartments at their warmest settings. The requirements for the warmest or coldest temperature settings of this section do not apply to features or functions associated with temperature control (such as quick freeze) that are initiated manually and terminated automatically within 168 hours.

Movable subdividing barriers that separate compartments of different types (*e.g.,* fresh food on one side and cooler on the other side) shall be placed in the median position. If such a subdividing barrier has an even number of positions, the near-median position representing the smallest volume of the warmer compartment(s) shall be used.

* * * * *

5. Test Measurements

5.1 Temperature Measurements. * * *

(b) If the interior arrangements of the unit under test do not conform with those shown in Figure 5.2 of HRF–1–2008, the unit must be tested by relocating the temperature sensors from the locations specified in the figures to avoid interference with hardware or components within the unit, in which case the specific locations used for the temperature sensors shall be noted in the test data records maintained by the manufacturer in accordance with 10 CFR 429.71, and the certification report shall indicate that non-standard sensor locations were used. If any temperature sensor is relocated by any amount from the location prescribed in Figure 5.2 of HRF–1–2008 in order to maintain a minimum 1-inch air space from adjustable shelves or other components that could be relocated by the consumer, except in cases in which the Figure prescribe a temperature sensor location within 1 inch of a shelf or similar feature, this constitutes a relocation of temperature sensors that must be recorded in the test data and reported in the certification report as described above.

* * * * *

5.1.3 Freezer Compartment Temperature. The freezer compartment temperature shall be calculated as:

$$TF = \frac{\sum_{i=1}^{F}(TF_i) \times (VF_i)}{\sum_{i=1}^{F}(VF_i)}$$

Where:

F is the total number of applicable freezer compartments, which include the primary freezer compartment and any

number of separate auxiliary freezer compartments;

TF_i is the compartment temperature of freezer compartment ''i'' determined in accordance with section 5.1.2 of this appendix; and

VF_i is the volume of freezer compartment ''i''.

* * * * *

5.3 Volume Measurements. (a) The unit's total refrigerated volume, VT, shall be measured in accordance with HRF–1–2008 (incorporated by reference; see § 430.3), section 3.30 and sections 4.2 through 4.3. The measured volume shall include all spaces within the insulated volume of each compartment except for the volumes that must be deducted in accordance with section 4.2.2 of HRF–1–2008, as provided in paragraph (b) of this section.

(b) The following component volumes shall not be included in the compartment volume measurements: Icemaker compartment insulation, fountain recess, dispenser insulation, and ice chute (if there is a plug, cover, or cap over the chute per Figure 4–2 of HRF–1–2008). The following component volumes shall be included in the compartment volume measurements: Icemaker auger motor (if housed inside the insulated space of the cabinet), icemaker kit, ice storage bin, and ice chute (up to the dispenser flap, if there is no plug, cover, or cap over the ice chute per Figure 4–3 of HRF–1–2008).

(c) Total refrigerated volume is determined by physical measurement of the test unit. Measurements and calculations used to determine the total refrigerated volume shall be retained as part of the test records underlying the certification of the basic model in accordance with 10 CFR 429.71.

(d) Compartment classification shall be based on subdivision of the refrigerated volume into zones separated from each other by subdividing barriers: No evaluated compartment shall be a zone of a larger compartment unless the zone is separated from the remainder of the larger compartment by subdividing barriers; if there are no such subdividing barriers within the larger compartment, the larger compartment must be evaluated as a single compartment rather than as multiple compartments. If the cabinet contains a movable subdividing barrier, it must be placed as described in section 2.5 of this appendix.

(e) Freezer compartment volumes shall be calculated and recorded to the nearest 0.01 cubic feet. Total refrigerated volume shall be calculated and recorded to the nearest 0.1 cubic feet.

6. Calculation of Derived Results From Test Measurements

6.1 Adjusted Total Volume. The adjusted total volume of each tested unit must be determined based upon the volume measured in section 5.3 of this appendix using the following calculations. Where volume measurements for the freezer are recorded in liters, the measured volume must be converted to cubic feet and rounded to the nearest 0.01 cubic foot prior to calculating the adjusted volume. Adjusted total volume shall be calculated and recorded to the nearest 0.1 cubic foot. The adjusted total volume, AV, for freezers under test shall be defined as:

$$AV = VT \times CF$$

Where:

VA = adjusted total volume in cubic feet;

VT = total refrigerated volume in cubic feet; and

CF = dimensionless correction factor of 1.76.

* * * * *

6.2.1 If the compartment temperature is always below 0.0 °F (− 17.8 °C), the average per-cycle energy consumption shall be equivalent to:

$$E = ET1 + IET$$

Where:

E = total per-cycle energy consumption in kilowatt-hours per day;

ET is defined in section 5.2.1 of this appendix;

The number 1 indicates the test during which the highest compartment temperature is measured; and

IET, expressed in kilowatt-hours per cycle, equals 0.23 for a product with an automatic icemaker and otherwise equals 0 (zero).

6.2.2 If one of the compartment temperatures measured for a test is greater than 0.0 °F (17.8 °C), the average per-cycle energy consumption shall be equivalent to:

$$E = ET1 + ((ET2 - ET1) \times (0.0 - TF1)/(TF2 - TF1)) + IET$$

Where:

E and IET are defined in section 6.2.1 of this appendix and ET is defined in section 5.2.1 of this appendix;

TF = freezer compartment temperature determined according to section 5.1.3 of this appendix in degrees F;

The numbers 1 and 2 indicate measurements taken during the two tests to be used to calculate energy consumption, as specified in section 3 of this appendix; and

0.0 = standardized compartment temperature in degrees F.

* * * * *

7. Test Procedure Waivers

To the extent that the procedures contained in this appendix do not provide a means for determining the energy consumption of a basic model, a manufacturer must obtain a waiver under § 430.27 to establish an acceptable test procedure for each such basic model. Such instances could, for example, include situations where the test set-up for a particular basic model is not clearly defined by the provisions of section 2 of this appendix. For details regarding the criteria and procedures for obtaining a waiver, please refer to § 430.27.

Appendix B1—[Removed]

■ 14. Appendix B1 to subpart B is removed.

[FR Doc. 2016–14389 Filed 7–15–16; 8:45 am]

BILLING CODE 6450–01–P