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10 CFR Part 431
Energy Conservation Program: Test Procedure for Commercial Refrigeration Equipment; Final Rule

DEPARTMENT OF ENERGY

10 CFR Part 431

[Docket No. EERE–2010–BT–TP–0034]

RIN 1904–AC40

Energy Conservation Program: Test Procedure for Commercial Refrigeration Equipment

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

ACTION: Final rule.

SUMMARY: In this final rule, the U.S. Department of Energy (DOE) is amending its test procedure for commercial refrigeration equipment (CRE), incorporating changes that will take effect 30 days after the final rule is published in the **Federal Register**. These changes will be mandatory for equipment testing to demonstrate compliance with the amended energy standards (Docket No. EERE–2010–BT–STD–0003). The amendments to the test procedure adopted in this final rule include updating references to industry test procedures to their current versions, incorporating methods to evaluate the energy impacts resulting from the use of night curtains and lighting occupancy sensors and controls, and allowing testing of certain commercial refrigeration equipment at the lowest temperature at which it is able to operate, referred to as its lowest application product temperature. In response to comments received in response to the relevant November 2010 Notice of Proposed Rulemaking (NOPR), and to minimize the testing burden on manufacturers, DOE is also incorporating provisions to allow manufacturers to test at the rating temperatures and ambient conditions required by NSF International (founded in 1944 as the National Sanitation Foundation, now referred to simply as NSF) for food safety testing.

DATES: The effective date of this rule is March 22, 2012. The final rule changes will be mandatory for equipment testing starting on the compliance date of any amended energy conservation standards promulgated as a result of the on-going energy conservation standard rulemaking for commercial refrigeration equipment (Docket No. EERE–2010–BT–STD–0003). Representations either in writing or in any broadcast advertisement with respect to energy consumption of commercial refrigeration equipment must also be made using the revised DOE test procedure beginning on that compliance date.

The incorporation by reference of certain publications listed in this final rule is approved by the Director of the Office of the Federal Register as of March 22, 2012.

ADDRESSES: The docket is available for review at regulations.gov, including **Federal Register** notices, framework documents, public meeting attendee lists and transcripts, comments, and other supporting documents/materials. All documents in the docket are listed in the regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket Web page can be found at: *www1.eere.energy.gov/buildings/appliance_standards/commercial/refrigeration_equipment.html.* This Web page will contain a link to the docket for this notice 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 docket. 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.*

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SUPPLEMENTARY INFORMATION: This final rule incorporates by reference into Part 431 the following industry standards:

(1) Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standard 1200 (I–P)–2010, ''2010 Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,'' and

(2) Association of Home Appliance Manufacturers (AHAM) Standard HRF–1–2008, ''Energy and Internal Volume of Refrigerating Appliances (2008),'' including Errata to Energy and Internal Volume of Refrigerating Appliances, Correction Sheet issued November 17, 2009.

Copies of AHRI standards may be purchased from the Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Blvd., Suite 500, Arlington, VA 22201, 703–524–8800, or at *www.ahrinet.org.*

Copies of AHAM standards may be purchased from the Association of Home Appliance Manufacturers, 1111 19th Street, NW., Suite 402, Washington, DC 20036, 202–872–5955, or at *www.aham.org.*

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I. Authority and Background

A. Authority

Title III, Part C of the Energy Policy and Conservation Act of 1975 (EPCA), Public Law 94–163 (42 U.S.C. 6311–6317, as codified), added by Public Law 95–619, title IV, section 441(a), established the Energy Conservation Program for Certain Industrial Equipment, a program covering certain industrial equipment, which includes commercial refrigerators, freezers, and refrigerator-freezers, the subject of this final rule.[1]

Under EPCA, this program consists essentially of four parts: (1) Testing; (2) labeling; (3) Federal energy conservation standards [2]; and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers of covered equipment must use (1) as the basis for certifying to DOE that their equipment complies with the applicable energy conservation standards adopted under EPCA; and (2) for making representations about the efficiency of those pieces of equipment. Similarly, DOE must use these test requirements to determine whether the equipment complies with relevant standards promulgated under EPCA. (42 U.S.C. 6315(b), 6295(s), and 6316(a)) The current test procedure for commercial refrigeration equipment appears under Title 10 of the Code of Federal Regulations (CFR) part 431, subpart C.

EPCA requires DOE to conduct an evaluation of each class of covered equipment at least once every 7 years to determine whether to, among other things, amend the test procedure for such equipment. (42 U.S.C. 6314(a)(1)(A)) This rulemaking fulfills DOE's obligation under EPCA to evaluate the test procedure for commercial refrigeration equipment every 7 years.

In addition, EPCA contains specific provisions relating to the test procedure for commercial refrigeration equipment. The test procedure for commercial refrigerators, freezers, and refrigerator-freezers must be: (1) The test procedure determined to be generally accepted industry testing procedures; or (2) rating procedures developed or recognized by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) or by the American National Standards Institute (ANSI). (42 U.S.C. 6314(a)(6)(A)(i)) EPCA also establishes the initial test procedure for self-contained refrigerators, freezers, and refrigerator-freezers with doors. EPCA established the ASHRAE Standard 117 test procedure, ''Method of Testing Closed Refrigerators,'' (ASHRAE 117–2002) as the initial test procedure for commercial refrigeration equipment, which became effective on January 1, 2005. (42 U.S.C. 6314(a)(6)(A)(ii))

EPCA also establishes that if ASHRAE 117 is amended, the Secretary of Energy (Secretary) must, by rule, amend the DOE test procedure to ensure consistency with the amended ASHRAE 117 standard, unless a case can be made, through certain findings based on clear and convincing evidence, that the amended ASHRAE 117 does not meet the requirements for a test procedure set forth in EPCA. (42 U.S.C. 6314(a)(6)(E) and 6314(2)–(3)) In addition, EPCA states that if a test procedure other than ASHRAE 117 is approved by ANSI, the Secretary must review the relative strengths and weaknesses of such a new test procedure relative to the ASHRAE 117 test procedure and, based on that review, determine whether to adopt the alternate test procedure as the DOE test procedure. (42 U.S.C. 6314(a)(6)(F))

B. Background

ASHRAE amended ASHRAE 117–2002 and adopted ASHRAE Standard 72–2005, ''Method of Testing Commercial Refrigerators and Freezers,'' in its place, which was approved by ANSI on July 29, 2005. During the 2006 en masse test procedure rulemaking, which adopted the test procedures specifically established in EPACT 2005, DOE reviewed ASHRAE Standard 72–2005, as well as ARI Standard 1200–2006. 71 FR 71357 (Dec. 8, 2006). DOE determined that ARI Standard 1200–2006 references the test procedure in ASHRAE Standard 72–2005, as well as the rating temperatures prescribed in EPACT 2005 for certain types of commercial refrigerators and freezers. (42 U.S.C. 6314(a)(6)(B)(i)) As a result, on December 8, 2006, DOE published a final rule (December 2006 en masse test procedure final rule) that, among other things, adopted ANSI/Air-Conditioning and Refrigeration Institute (ARI) Standard 1200–2006, ''2006 Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,'' (hereafter referenced as ARI Standard 1200–2006) as the referenced test procedure for measuring energy consumption for commercial refrigeration equipment. 71 FR 71370 (Dec. 8, 2006); 10 CFR 431.63–64. ARI Standard 1200–2006 prescribes rating temperature specifications of 38 °F (±2 °F) for commercial refrigerators and refrigerator compartments, 0 °F (±2 °F) for commercial freezers and freezer compartments, and −5 °F (±2 °F) for commercial ice-cream freezers. Even though ARI Standard 1200–2006 specified a rating temperature for commercial ice-cream freezers, EPACT 2005 did not specify a rating temperature or standards for commercial ice-cream freezers. During the 2006 test procedure rulemaking, DOE determined that testing at a −15 °F (±2 °F) rating temperature was more representative of the actual energy consumption of commercial freezers specifically designed for ice-cream application. 71 FR 71357 (Dec. 8, 2006). Therefore, in the December 2006 en masse test procedure final rule, DOE adopted a −15 °F (±2 °F) rating temperature for commercial ice-cream freezers, rather than the −5 °F (±2 °F) prescribed in the ARI Standard 1200–2006. *Id.* at 71357 (Dec. 8, 2006). In addition, as part of the 2006 en masse test procedure final rule, DOE adopted ANSI/AHAM Standard HRF–1–2004, ''Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers,'' (hereafter referred to as AHAM HRF–1–2004) for measuring refrigerated compartment volumes for equipment covered under this rule. *Id.* at 71358 (Dec. 8, 2006).

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

[2] EPCA prescribes energy conservation standards for self-contained commercial refrigerators, freezers, and refrigerator-freezers with solid or transparent doors designed for holding temperature applications, as well as self-contained refrigerators with transparent doors designed for pull-down applications. (42 U.S.C. 6313(c)(2)–(3)) EPCA also requires DOE to develop standards for ice-cream freezers; self-contained commercial refrigerators, freezers, and refrigerator-freezers without doors; and remote condensing commercial refrigerators, freezers, and refrigerator-freezers. (42 U.S.C. 6313(c)(4)(A)) DOE conducted a rulemaking to establish standards for these equipment classes (2009 energy conservation standards rulemaking) and published a final rule on January 9, 2009 (the January 2009 final rule). 74 FR 1092.

Approximately one year after the publication of the December 2006 en masse test procedure final rule, ARI merged with the Gas Appliance Manufacturers Association (GAMA) to form the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), and updated its test procedure, the most recent version of which is AHRI Standard 1200–2010, ''2010 Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,'' (hereafter referenced as AHRI Standard 1200–2010), which was approved by ANSI on January 4, 2011. AHRI Standard 1200–2010 includes changes to (1) the equipment class nomenclature used in the test procedure, (2) the method of normalizing equipment energy consumption, (3) the ice-cream freezer test temperature, and (4) other minor clarifications. These changes aligned the AHRI test procedure with the nomenclature, rating temperatures, and normalization method used in DOE's 2009 energy conservation standards rulemaking for commercial refrigeration equipment. 74 FR 1092, 1093–96 (Jan. 9, 2009).

Similarly, AHAM updated Standard HRF–1–2004 to its most recent version, AHAM HRF–1–2008, ''Energy and Internal Volume of Refrigerating Appliances.'' The changes to this standard were mostly editorial and involved reorganizing some of the sections for greater simplicity and usability. As part of the reorganization, the sections of AHAM HRF–1–2004 that currently are referenced within the DOE test procedure, specifically section 3.21, ''Volume''; sections 4.1 through 4.3, ''Method for Computing Total Refrigerated Volume and Total Shelf Area of Household Refrigerators and Household Wine Chillers''; and sections 5.1 through 5.3, ''Method for Computing Total Refrigerated Volume and Total Shelf Area of Household Freezers''; were reorganized and renumbered in the updated HRF–1–2008. However, the content of those sections was not changed substantially. The newly updated AHRI Standard 1200–2010 references the most recent version of the AHAM standard, AHAM HRF–1–2008. As such, DOE is updating its test procedures to adopt AHRI Standard 1200–2010 as the test procedure for commercial refrigeration equipment and AHAM HRF–1–2008 as the prescribed method for determining refrigerated compartment volume.

DOE is also incorporating new test methods in the DOE test procedure to better address certain energy efficiency features applicable to CRE that cannot be accounted for by the current test procedure. During the advanced notice of proposed rulemaking phase of the 2009 energy conservation standards rulemaking for commercial refrigeration equipment, DOE screened out several energy efficient technology options because their effects were not captured by the current test procedure. 72 FR 41162, 41179–80 (July 26, 2007). In the amended test procedure described in this final rule, DOE is adopting modifications to its test procedure to better address some of these technologies. Specific changes include provisions for measuring the impact of night curtains [3] and lighting occupancy sensors and controls [4].

On May 18, 2010, DOE held a public meeting (the May 2010 Framework public meeting) to discuss the rulemaking framework for the concurrent CRE energy conservation standards (Docket No. EERE–2010–BT–STD–0003). *See* 75 FR 24824 (May 6, 2010). During the May 2010 Framework public meeting, DOE received comments from several interested parties that additional rating temperatures should be considered in the test procedure for certain types of specialized commercial refrigeration equipment. The commenters stated that some covered commercial refrigeration equipment designed for operation at higher temperatures is not able to be tested at the prescribed 38 °F, and they suggested that DOE consider this in both the test procedure and the standards rulemakings. (Docket No. EERE–2010–BT–STD–0003, California Codes and Standards, No. 1.3.005 [5] at p. 3) For example, some equipment is designed for storing goods such as wine, candy, and flowers at temperatures that are held constant, but are higher than the temperatures typically used in commercial refrigerators for perishable food storage and merchandising. (Docket No. EERE–2010–BT–STD–0003, Structural Concepts, No. 1.2.006 at p. 59) Consequently, in the NOPR DOE issued on November 24, 2010 to propose amendments to the test procedure for commercial refrigeration equipment (November 2010 NOPR), DOE proposed provisions for testing commercial refrigeration equipment that is designed to operate at temperatures higher than 38 °F at the lowest integrated average product temperature the equipment can achieve, defined as the lowest possible application product temperature. 76 FR 71596, 71605. On January 6, 2011, DOE held a public meeting (January 2011 NOPR public meeting) to discuss the amendments proposed in the November 2010 NOPR and to provide an opportunity for interested parties to comment (*www1.eere.energy.gov/buildings/appliance_standards/commercial/pdfs/fr_cre_nopr_11_24_2010.pdf*). At the January 2011 NOPR public meeting, DOE received further comments from interested parties that the proposed provisions for testing equipment at the lowest application product temperature should be expanded to include freezers and ice-cream freezers. As an example, interested parties pointed out that ice storage units are designed to operate at 20 °F. Equipment that operates at 20 °F would fall into the freezer temperature category, but interested parties claim that this specific type of equipment cannot operate at 0 °F, which is the prescribed rating temperature for freezers in the current test procedure. (True, No. 19 at p. 191 [6]; Hussmann, No. 19 at pp. 192–93; Traulsen, No. 19 at p. 194) In response to these comments, DOE is incorporating a provision in this final rule permitting testing any equipment that cannot be tested at the prescribed rating temperature to be tested at the ''lowest application product temperature.''

C. Test Procedure Rulemaking Requirements and Impact on Energy Conservation Standards

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered equipment.

[3] Night curtains are devices made of an insulating material, typically insulated aluminum fabric, designed to be pulled down over the open front of the case (similar to the way a window shade operates) to decrease infiltration and heat transfer into the case when the merchandizing establishment is closed.

[4] Lighting occupancy sensors are devices that automatically shut off or dim the lights in display cases when no motion is detected in the sensor's coverage area for a certain preset period of time. *Scheduled lighting control* means a device which automatically shuts off or dims the lighting in a display case at preset scheduled times throughout the day.

[5] In the Framework document docket for commercial refrigeration equipment energy conservation standards, comments were identified using the following format based on when the comment was submitted in the rulemaking process. Section 1.1.XXX refers to **Federal Register** documents, section 1.2.XXX refers public meeting support documents, and 1.3.XXX refers to comments submitted by interested parties. This particular notation refers to a comment (1) by California Codes and Standards, (2) in document number 5 of the written comments submitted by interested parties, and (3) appearing on page 3.

[6] A notation in this form provides a reference for information that is in the docket of DOE's rulemaking to develop test procedures for commercial refrigeration equipment (Docket No. EERE–2010–BT–TP–0034), which is maintained at *www.regulations.gov*. This notation indicates that the statement preceding the reference is document number 19 in the docket for the commercial refrigeration equipment test procedure rulemaking, and appears at page 191 of that document.

EPCA requires that the test procedures promulgated by DOE be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs of the covered equipment during a representative average use cycle. EPCA also requires that the test procedure not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2)) 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 any amendment. (42 U.S.C. 6314(b)(1)–(2))

EPCA also prescribes that if any rulemaking amends a test procedure, DOE must determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency of any covered equipment as determined under the existing test procedure. (42 U.S.C. 6293(e)(1) and 6314(a)(6)) Further, if DOE determines that the amended test procedure would alter the measured efficiency of covered equipment, DOE must amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2) and 6314(a)(6)) DOE recognizes that the test procedure amendments adopted in this final rule will affect the measured energy use of some commercial refrigeration equipment. However, DOE is currently considering amendments to the existing Federal energy conservation standards for commercial refrigeration equipment in a concurrent rulemaking, (Docket No. EERE–2010–BT–STD–0003). DOE will use the test procedure amendments adopted in this final rule as the basis for standards development in the concurrent energy conservation standards rulemaking.

Today's rule also fulfills DOE's obligation to periodically review its test procedures under 42 U.S.C. 6314(a)(1)(A). DOE anticipates that its next evaluation of this test procedure will occur in a manner consistent with the timeline set out in this provision.

II. Summary of the Final Rule

DOE is modifying its test procedure for commercial refrigeration equipment to incorporate current industry-accepted test procedures, address certain energy efficiency features that are not accounted for in the current test procedure (*i.e.,* night curtains and light occupancy sensors and controls), and allow testing of commercial refrigeration equipment at temperatures other than one of the three currently specified rating temperatures. Specifically, this test procedure final rule permits testing of commercial refrigeration equipment at the lowest application product temperature. This final rule also allows manufacturers to test equipment at the test conditions prescribed by NSF/ANSI–7, ''Commercial Refrigerators and Freezers'' (hereafter referred to as NSF–7), a food safety standard issued by NSF.[7] The NSF–7 test conditions represent more stringent rating temperatures and ambient conditions than the DOE test procedure conditions and are required by NSF for food safety testing of certain commercial refrigeration equipment. These test procedure amendments alter the measured energy efficiency of some covered equipment. As such, DOE is establishing in this final rule that use of the amended test procedure for compliance with DOE energy conservation standards or representations with respect to energy consumption of commercial refrigeration equipment is required on the compliance date of any revised energy conservation standards, which are being considered in a concurrent rulemaking (Docket No. EERE–2010–BT–STD–0003). DOE has added language to the final test procedure amendments to clarify that manufacturers are required to use the amended test procedure to demonstrate compliance with DOE's energy conservation standards, and for labeling or other representations as to the energy consumption of any covered equipment, beginning on the compliance date of any final rule establishing amended energy conservation standards for commercial refrigeration equipment. Prior to the compliance date of this final rule, manufacturers will continue to use the existing DOE test procedure established by the 2006 en masse test procedure final rule (71 FR 71370 (Dec. 8, 2006)),[8] and set forth at 10 CFR 431.64, to show compliance with existing DOE energy conservation standards and for representations concerning the energy consumption of covered equipment.

In the November 2010 NOPR, DOE proposed amendments to the existing test procedure for commercial refrigeration equipment. 76 FR 71596 (Nov. 24, 2010). DOE held a public meeting on January 6, 2011 to present the amendments proposed in the November 2010 NOPR and received comments from interested parties. DOE analyzed the comments received as a result of the January 2011 NOPR public meeting and incorporated recommendations, where appropriate, into this test procedure final rule. The specific test procedure amendments and responses to all comments DOE received as a result of the November 2010 NOPR are presented in section III, ''Discussion.''

III. Discussion

Section III.A presents all of the revisions to the DOE test procedure found at 10 CFR part 431, subpart C, ''Uniform test method for measuring the energy consumption of commercial refrigerators, freezers, and refrigerator-freezers,'' incorporated in this final rule, and discusses the comments received on these topics during the January 2011 NOPR public meeting and the associated comment period. These revisions include the following:

1. Updated references to industry test procedures to their most current versions;
2. Inclusion of a method for determining energy savings due to the use of night curtains on open cases;
3. Inclusion of a calculation for determining energy savings due to use of lighting occupancy sensors or controls;
4. Inclusion of a provision for testing at lowest application product temperature; and
5. Provisions allowing testing of equipment at NSF test temperatures.

At the January 2011 NOPR public meeting and in subsequent written form, DOE received many comments from stakeholders that did not pertain to a specific test procedure amendment. In section III.B, DOE provides responses to comments pertaining to the following subject areas:

1. Equipment scope;
2. Effective date;
3. Preemption;
4. Burden of testing;
5. Alternative refrigerants; and
6. Secondary coolant systems.

A. Amendments to the Test Procedure

Today's final rule incorporates the following changes to the test procedure for commercial refrigeration equipment in 10 CFR part 431, subpart C.

1. Updated References to Industry Test Procedures to Their Most Current Versions

In this final rule, DOE is updating the industry test procedures referenced in the DOE test procedure for commercial refrigeration equipment to their most current versions, namely AHRI Standard 1200–2010 and AHAM Standard HRF–

[7] NSF International. ''NSF/ASNI 7—2009: Commercial Refrigerators and Freezers.'' Ann Arbor, MI. *http://www.nsf.org/business/food_equipment/standards.asp.*

[8] Hereafter, any reference in this document to the current or existing DOE test procedure will refer to the test procedure for commercial refrigeration equipment established by the 2006 en masse test procedure final rule. 71 FR 71370 (Dec 8, 2006).

1–2008. The current DOE test procedure for commercial refrigeration equipment, published in the **Federal Register** on December 8, 2006, adopted ARI Standard 1200–2006, with additional provisions for testing ice-cream freezers at −15 °F, as the test procedure used to establish compliance with the applicable energy conservation standard. 71 FR 71340, 71356–58. Since the publication of the December 2006 en masse test procedure final rule, AHRI has released an updated version of its test procedure, AHRI Standard 1200–2010. The updated test procedure includes both editorial and technical changes to (1) the equipment class nomenclature used within the test procedure; (2) the integrated average rating temperature for ice-cream freezers; and (3) the method of normalizing and reporting units for equipment energy consumption. These changes align the AHRI test procedure with the nomenclature and method adopted by DOE in the January 2009 final rule. 74 FR 1092 (Jan. 9, 2009); 10 CFR 431.66. AHRI Standard 1200–2010 is also the test procedure currently used in the commercial refrigeration industry. In the November 2010 NOPR, DOE proposed to incorporate by reference AHRI 1200–2010 in the DOE test procedure. 75 FR 71602 (Nov. 24, 2010).

The current DOE test procedure also references AHAM HRF–1–2004 as the protocol for determining refrigerated compartment volume. AHAM has also updated its Standard HRF–1–2004 to newer version AHAM HRF–1–2008, which makes editorial changes including reorganizing some sections for greater simplicity and usability. AHRI 1200–2010 also references AHAM HRF–1–2008. For consistency, in the November 2010 NOPR, DOE proposed to incorporate by reference the more recent AHAM HRF–1–2008 in the test procedure for measuring refrigerated compartment volume. 75 FR 71602 (Nov. 24, 2010).

In commenting on the November 2010 NOPR, AHRI, the American Council for an Energy-Efficient Economy (ACEEE), and the Northwest Energy Efficiency Alliance (NEEA) all supported DOE's proposals. (AHRI, No. 15 at p. 2; ACEEE, No. 12 at p. 2; NEEA, No. 8 at p. 3) DOE did not receive any dissenting comments. DOE believes AHRI 1200–2010 and AHAM Standard HRF–1–2008 are the most up-to-date and commonly used test procedures for commercial refrigeration in the industry. DOE agrees with interested parties that these test procedures are appropriate to characterize the energy consumption of all commercial refrigeration equipment included within the scope of this rulemaking. Thus, in this final rule, DOE is updating the industry test procedures referenced in the DOE test procedure for commercial refrigeration equipment to their most current versions, AHRI Standard 1200–2010 and AHAM Standard HRF–1–2008.

2. Inclusion of a Method for Determining Reduced Energy Consumption Due to the Use of Night Curtains on Open Cases

DOE's current test procedure does not account for potential decreased energy consumption resulting from the use of night curtains on commercial refrigeration equipment. Night curtains are devices made of an insulating material, typically insulated aluminum fabric, designed to be pulled down over the open front of the case (similar to the way a window shade operates) when the merchandizing establishment is either closed or the customer traffic is significantly decreased. The insulating shield, or night curtain, decreases infiltration by preventing the mixing of the cool air inside the case with the relatively warm, humid air in the store interior. It also reduces conductive and radiative heat transfer into the case. Night curtains reduce compressor loads and defrost cycles, which can decrease the total energy use of the commercial refrigeration equipment. A 1997 study by the Southern California Edison Refrigeration Technology and Test Center found that, when used for 6 hours per day, night curtains reduce total energy use of the case by approximately 8 percent.[9]

In the November 2010 NOPR, DOE proposed adopting a standardized physical test method to allow manufacturers to account for the possible energy reduction associated with night curtains installed on open cases. DOE chose a physical test because it accurately captures differences in energy consumption as a function of similar technologies and case dimensions. 75 FR 71602–03 (Nov. 24, 2010). It is important to capture the different impacts on energy consumption among different night curtain designs because of the significant performance disparities that can exist. For example, night curtains made of low-emissivity materials, such as aluminum, decrease the radiative losses from the case and therefore are much more effective at reducing heat loss than night curtains made of plastic, linoleum, or other non-reflective materials. In addition, each night curtain may reduce energy consumption differently, depending on its particular insulating characteristics and design. Case dimensions, air curtain performance, and base infiltration load also impact night curtain performance. A physical test also accurately captures differences in the energy conservation performance of night curtains as a function of case dimension or night curtain design.

In the November 2010 NOPR, DOE proposed using a physical test method similar to section 7.2 in ASHRAE Standard 72–2005, ''Door-Opening Requirements,'' which reads as follows:

> Night Curtain Requirements. For open display cases sold with night curtains installed, the night curtain shall be employed according to manufacturer instructions for a total of 6 hours, 3 hours after the start of a defrost period. Upon the completion of the 6-hour period, the night curtain shall be raised until the completion of the 24-hour test period.

DOE further clarified that the test procedure for night curtains would, if adopted, apply only to cases sold with night curtains installed. 75 FR 71602–03 (Nov. 24, 2010). Following publication of the November 2010 NOPR, DOE received comments regarding the representative use of night curtains, the types of cases on which night curtains can be used, and the cost effectiveness of night curtains. These comments and DOE's responses are presented in the following sections.

a. Representative Use

While interested parties generally agreed with the proposed test procedure for night curtains, some interested parties expressed concerns regarding the way in which night curtains would be treated in the standards analysis, including the concern that the potential treatment might not be representative of actual use. Zero Zone stated that, while it agreed with the proposed test method for night curtains, it did not believe that night curtains should be allowed to be used to reduce measured energy consumption in the DOE test procedure because installing them does not necessarily mean that end users will deploy them. In addition, Zero Zone stated that 24-hour stores cannot use night curtains, and that night curtains may have a short lifetime. (Zero Zone, No. 16 at p. 1) AHRI supported providing a method to account for the reduced energy consumption of night curtains, but questioned the origin of DOE's 6-hour assumption. (AHRI, No. 19 at pp. 72–73) Earthjustice stated that,

[9] Southern California Edison, Refrigeration and Technology and Test Center, Energy Efficiency Division. *Effects of the Low Emissivity Shields on Performance and Power Use of a Refrigerated Display Case.* August 1997. Irwindale, CA. *www.econofrost.com/acrobat/sce_report_long.pdf.*

in accordance with the provisions of EPCA, which guide DOE's development of test procedures and call for the test procedures to reflect ''representative use,'' DOE should account for the inapplicability of night curtains to 24-hour retailers; the likelihood of end users actually deploying night curtains; and the relative lifetime of night curtains and likelihood of users replacing broken ones. Earthjustice added that, while CRE lifetimes span 10 to 15 years according to DOE's own figures, research has estimated a 7-year lifetime for night curtains. (Earthjustice, No. 11 at p. 1) California Codes and Standards agreed that night curtains have significantly shorter lifetimes than most of the other components that comprise an open display case, and suggested that any credit given to night curtains should be discounted because their effective life is short. (California Codes and Standards, No. 13 at p. 3) The Natural Resources Defense Council (NRDC) agreed with DOE's proposal, but reiterated Earthjustice's concern that night curtains are not reliably used in the field and have shorter lifetimes than the refrigerated cases. (NRDC, No. 14 at p. 2) ACEEE recommended that DOE base its treatment of night curtains on underlying data that present a realistic estimate of actual patterns of field use, the fraction of users who actually employ them, and the relative lifetimes of these features. (ACEEE, No. 12 at p. 4) California Codes and Standards expressed concern that DOE's treatment of night curtains might not be representative of actual in-field usage and thus might overstate the savings derived from night curtains. Such use, the comment stated, is dependent both on the specific application and on human (employee) behavior. (California Codes and Standards, No. 13 at pp. 2–3) NEEA commented that it believes the use of night curtains for compliance testing could grant too much credit to a feature that has questionable in-field value, which would undermine the statutory requirement that the test procedure reasonably approximate actual use. In addition, NEEA commented that night curtains would have negligible impacts during periods of peak demand, and that if manufacturers preferred night curtains to features that would reduce energy consumption during peak demand periods, the incorporation of night curtains would not be advantageous. Because of this, NEEA agreed with DOE's proposed 6-hour cycle of use for night curtains in the test procedure when a case is tested with night curtains because it is more conservative than an 8-hour cycle. (NEEA, No. 8 at p. 4)

In response to interested parties' comments that the intended use of a night curtain does not necessarily represent actual use in the field, DOE acknowledges that actual use of night curtains may be variable in the field. However, night curtains are an available technology for reducing energy consumption in commercial refrigeration equipment, and DOE believes that including night curtains in its test procedure provides manufacturers with a mechanism for estimating the energy consumption impacts of this technology and provides a more accurate representation of how those units may operate when installed. The test procedure adopted in this final rule is consistent across all cases sold with night curtains, regardless of their anticipated use. With regard to Earthjustice's concern with respect to the use of night curtains in 24-hour stores, DOE is not mandating the use of night curtains, but rather is simply accounting for the use of night curtains in the 24-hour test procedure. In addition, DOE notes that night curtains may in fact be used in 24-hour stores during periods of low use, although DOE concedes that this is less common.

In response to AHRI's question regarding why DOE proposed 6 hours as the time period for night curtains to be implemented, DOE believes that 6 hours conservatively represents the amount of time a night curtain would be drawn in a typical, non-24-hour store, when accounting for stocking and the fact that not all night curtains can be deployed at once. In addition, 6 hours is consistent with all field data and studies that DOE has identified.[10] [11] [12]

In response to the comments regarding the expected life of a night curtain, DOE understands that a night curtain may have a shorter life than a display case. However, DOE accounts for repair and replacement costs in the energy conservation standards analyses and believes these issues are better addressed in that rulemaking. DOE believes a 6-hour period of use adequately represents the anticipated use of a night curtain, while DOE is also cognizant of potential reductions in energy savings due to application and field use issues. DOE will discuss treatment of night curtains further in the associated energy conservation standards rulemaking and its impact on the energy use of commercial refrigeration equipment (Docket No. EERE–2010–BT–STD–0003).

b. Applicable Equipment

Southern Store Fixtures stated that night curtains can only be practicably used on vertical open display cases, and further clarified that on semi-vertical display cases the night curtain can interfere with the air flow in the case. (Southern Store Fixtures, No. 19 at p. 135) True Manufacturing (True) responded that semi-vertical night curtains do exist. (True, No. 19 at p. 137) Southern Store Fixtures also commented that an air curtain, which blows air across the front of an open case to reduce infiltration, can be temporarily used to reduce infiltration and heat loss to the case, and inquired whether an air curtain would meet DOE's proposed definition of a night curtain. (Southern Store Fixtures, No. 19 at p. 136) NEEA supported DOE's proposed definition of night curtain, provided the definition would be applied only to open cases of all sorts. NEEA also stated that, while it is not opposed to the inclusion of air curtains in the definition of ''night curtain,'' it has seen no data to show that air curtains are used to reduce infiltration and heat loss or that they would save energy. However, NEEA saw no reason to exclude air curtains from the definition of night curtain. (NEEA, No. 8 at pp. 3–4)

Zero Zone requested clarification regarding whether the night curtain provision could be applied to cases with doors that also have night curtains installed (Zero Zone, No. 19 at p. 145), and offered that night curtains could provide benefits for doored cases. (Zero Zone, No. 16 at p. 1) True stated that it had seen night curtains implemented on doored cases and that this does save a minimal amount of energy, but that these minor savings did not justify consideration of night curtains in the DOE test procedure. (True, No. 19 at pp. 146–47) Zero Zone commented that DOE proposed in the test procedure NOPR that automatic controls be required on lighting in order to meet DOE's proposed definition of ''lighting occupancy sensor'' or ''lighting control.'' Given this proposal, Zero Zone questioned why automatic night curtains would not then be required to meet DOE's definition of ''night

[10] Southern California Edison, Refrigeration and Technology and Test Center, Energy Efficiency Division. *Effects of the Low Emissivity Shields on Performance and Power Use of a Refrigerated Display Case.* August 1997. Irwindale, CA. *www.econofrost.com/acrobat/sce_report_long.pdf.*

[11] Faramarzi, R. and Woodworth-Szieper, M. Effects of Low-E Shields on the Performance and Power Use of a Refrigerated Display Case. *ASHRAE Transactions.* 1999. 105(1).

[12] Portland Energy Conservation, Inc. *Query of Database of GrocerySmart Data.* Portland, OR. Received October 18, 2011. Last viewed July 23, 2011.

curtain.'' (Zero Zone, No. 16 at p. 1) Southern Store Fixtures commented that the provision for starting the night curtain test 3 hours after a defrost period creates a problem for cases that are on a timed defrost and scheduled to defrost every 2 hours. (Southern Store Fixtures, No. 19 at p. 142) Southern Store Fixtures added that defrost occurs more frequently for some open cases. In response to Southern Store Fixtures, ACEEE stated that, if the 75/55 rating condition [13] does not cause frost accumulation sufficient to require defrost after 3 hours, it would oppose any special consideration for equipment without adaptive defrost. The test procedure, ACEEE commented, should not shelter legacy technologies when more modern alternatives are available. (ACEEE, No. 12 at pp. 5–6)

In response to interested parties' comments on the use of night curtains on doored cases, it is DOE's understanding that night curtains can be applied to all types of open cases (vertical, semi-vertical, and horizontal) and that night curtains are most effective and commonly used on open cases, rather than on doored cases. DOE was not able to identify any publicly available data regarding the use of night curtains on doored cases. Lacking a sound technical basis for including night curtains on doored cases, DOE is hesitant to expand the definition of night curtain to explicitly include doored cases at this time. DOE also agrees with True in that use of night curtains on doored cases will not significantly impact the daily energy consumption of the display case as measured by the DOE test procedure. Therefore, DOE is not extending the night curtain test procedure to include night curtain testing on cases with doors in this final rule. DOE will continue to monitor the prevalence and energy saving potential of these technologies in the market and may address them in a future rulemaking.

In response to Southern Store Fixtures' comment regarding air curtains, the definition of a night curtain does not necessarily exclude air curtains because the definition does not specify a material or construction. DOE is defining a night curtain as a technology that is used temporarily to reduce infiltration and heat loss on commercial refrigeration equipment, without additional qualifiers. In response to Zero Zone's comment regarding automatic night curtains, both automatic and manual night curtains are included in this definition, as well as air curtains, provided that they are temporarily deployed to decrease air exchange and heat transfer between the refrigerated case and the surrounding environment. To accommodate all defrost cycles, the test procedure requires the night curtain to be drawn 3 hours after the first defrost cycle. This change is consistent with updates that ASHRAE is considering making to the ASHRAE Standard 72 requirements for door openings. This addresses Southern Store fixtures concern regarding cases which may defrost every 2 hours and would never reach a time period ''3 hours after defrost,'' since those cases now may select a defrost cycle as the ''first'' to begin the test and then initiate the night curtain test 3 hours following the first defrost.

c. Cost Effectiveness

In response to DOE's proposal for testing night curtains, Southern Store Fixtures commented that DOE should consider the cost effectiveness of night curtains and noted that the analysis supporting the development of State of California's Title 24, ''California's Energy Efficiency Standards for Residential and Nonresidential Buildings,'' [14] recently showed that using night curtains is not cost effective. (Southern Store Fixtures, No. 19 at p. 70) AHRI did not object to the inclusion of testing provisions for night curtains, but did not believe the installation of night curtains is a cost-effective measure to save a significant amount of energy. AHRI referenced a study conducted by California Codes and Standards [15] which examined the cost effectiveness of night curtains and suggested that DOE review this study as well. (AHRI, No. 15 at p. 2) California Codes and Standards responded that while the State of California determined that night curtains were not cost effective, the analysis did not include the potential for reduction in radiative heat losses, which could be substantial. (California Codes and Standards, No. 19 at pp. 74–75) AHRI also stated that night curtains should not be mandated. (AHRI, No. 19 at pp. 72–73)

DOE acknowledges interested parties' concerns regarding the cost effectiveness of night curtains. DOE will perform a cost-effectiveness analysis as part of the process to consider amended energy conservation standards for commercial refrigeration equipment. Additionally, DOE's energy conservation standards are performance standards, and neither night curtains nor any other specific technology will be mandated. Night curtains will be treated as a design that manufacturers could use to reduce energy consumption in the energy conservation standards analysis. The comments described above pertain mainly to energy conservation standards and will be addressed in more detail in that rulemaking.

3. Inclusion of a Calculation for Determining Reduced Energy Consumption Due to Use of Lighting Occupancy Sensors or Controls

The current DOE test procedure does not account for the potential reduction in energy consumption resulting from the use of lighting occupancy sensors and scheduled controls. The potential for decreased energy use due to the use of occupancy-based sensors or schedule-based controls varies in the field due to differing environmental and operating conditions. However, studies, including a demonstration project conducted through the DOE Solid State Lighting (SSL) Technology Demonstration GATEWAY program,[16] have shown that lighting occupancy sensors or controls could reduce the total energy use of a typical refrigerated merchandising unit operating in a grocery store by up to 40 percent.[17]

In the November 2010 NOPR, DOE proposed a calculation method to account for the reduced energy consumption due to the use of lighting

[13] ''75/55 rating condition'' describes the standard ambient temperature and relative humidity requirements for testing commercial refrigeration equipment in the DOE test procedure. Specifically, the DOE test procedure requires equipment be tested at 75 °F and 55 percent relative humidity.

[14] Title 24, California Code of Regulations, Part 6—''Efficiency Standards for Residential and Nonresidential Buildings.'' April 23, 2008.

[15] California Utilities Statewide Codes and Standards Team. *Working Draft Measure Information Template Supermarket Refrigeration: 2013 California Building Energy Efficiency Standards.* April 2011. *www.energy.ca.gov/title24/2013standards/prerulemaking/documents/2011-04-18_workshop/review/2013_CASE_NR15_Commercial_Refrigeration_working_draft_4.13.2011.pdf.*

[16] DOE's Solid State Lighting (SSL) Technology Demonstration GATEWAY program features high-performance SSL products for general illumination in a variety of exterior and interior applications. Eligible products are installed at demonstration host sites, where their performance can be evaluated. Performance measures include energy consumption, light output/distribution, and installation/interface/control issues. Qualitative performance is investigated via feedback surveys of the relevant user communities. More information on the program is available at *www1.eere.energy.gov/buildings/ssl/gatewaydemos.html.*

[17] U.S. Department of Energy. *Demonstration Assessment of Light-Emitting Diode (LED) Freezer Case Lighting.* October 2009. Prepared by Pacific Northwest National Laboratory for the U.S. DOE Solid State Lighting Technology Demonstration GATEWAY Program. Washington, DC. *http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/gateway_freezer-case.pdf.*

occupancy sensors or controls. The proposed lighting occupancy sensor test procedure consisted of three primary calculations: (1) Calculation of direct energy use of lighting with occupancy sensors or scheduled controls installed; (2) calculation of reduced refrigeration load when energy use of lights located within the refrigerated compartment is decreased; and (3) calculation of the adjusted daily energy consumption based on the decreased lighting energy use and decreased compressor energy use. These calculations require several default assumptions, which would be used uniformly for all cases employing this test procedure. These assumptions designate values for the length of time lighting is off or dimmed due to lighting occupancy sensors or scheduled controls, the energy efficiency ratio (EER) [18] of the compressor, and the portion of energy produced from the lights that becomes heat in the case and increases the refrigeration load. 75 FR 71602–05 (Nov. 24, 2010).

At the January 2011 NOPR public meeting, DOE presented its proposal for treatment of lighting occupancy sensors and scheduled controls. DOE received comments on the definitions DOE proposed, the scope of technology covered, the calculation of energy savings, and optional physical testing. As part of the associated CRE energy conservation standards rulemaking, DOE also received comments pertaining to the proposed test procedure provision for lighting occupancy sensors and scheduled lighting controls. The comments DOE received on these issues, as well as DOE's responses, are presented in the following sections.

a. Definition of Lighting Control and Lighting Occupancy Sensor

In the November 2010 NOPR, DOE proposed to define ''lighting control'' and ''lighting occupancy sensor'' as follows:

Lighting control means an electronic device which automatically adjusts the lighting in a display case at scheduled times throughout the day.

Lighting occupancy sensor means an electronic device which uses passive infrared, ultrasonic, or other motion-sensing technology to detect the presence of a customer or employee, allowing the lights within the equipment to be turned off or dimmed when no motion is detected in the sensor's coverage area.

75 FR 71611 (Nov. 24, 2010).

In response, NEEA agreed with DOE's proposed definitions for lighting controls, but stated that the term ''electronic'' seemed superfluous. (NEEA, No. 8 at p. 4) Coca-Cola Company (Coca-Cola) suggested that the term ''automatic'' or ''automatically'' be added to the definitions of lighting occupancy sensor and lighting controls. (Coca-Cola, No. 19 at p. 157) ACEEE agreed with NEEA that the term ''electronic'' should be removed from the definition of lighting control and occupancy sensor. Additionally, ACEEE added that the definition of lighting control should not be limited to scheduled times, as such a definition excludes the possibility of accounting for controllers that respond to ambient lighting conditions. (ACEEE, No. 12 at p. 4) ACEEE added that, although such technologies have not been developed yet, DOE has allowed for the possibility of other, more advanced technologies in other rulemakings by marking some technologies ''reserved.'' ACEEE also commented that it was partially DOE's responsibility to investigate these types of potentially attractive technology options that are not yet in the marketplace, and that it was important to ensure that any potential new technologies could be tested using the DOE test procedure. (ACEEE, No. 19 at pp. 181–82) True responded that the test procedure and energy conservation standards do not prevent manufacturers from innovating new technologies, but rather set a minimum standard that manufacturers must meet. True also commented that the desired lighting level in cases can differ based on a number of variables in addition to ambient lighting level (for example, based on marketing purposes). (True, No. 19 at pp. 183 and 186)

Southern Store Fixtures commented that DOE should consider the environmental impact of producing lighting occupancy sensors and controls and questioned their energy savings in the field. (Southern Store Fixtures, No. 19 at p. 153)

DOE agrees with interested parties that the term ''electronic'' may be superfluous and is removing the term from the definitions for ''lighting occupancy sensor'' and ''scheduled lighting control'' adopted in this final rule. In addition, DOE agrees with Coca-Cola that the term ''automatic'' more accurately describes the function of the devices described. DOE will also define ''scheduled lighting control'' instead of ''lighting control,'' as this term is more descriptive of the device being defined.

With respect to lighting controls that respond to external factors other than motion or physical presence, such as ambient light, DOE does not believe any such technologies are widely used and is not aware of any data regarding their efficacy. While these factors do not prevent DOE from including the potential for such technologies in the definition of lighting controls or in a new definition, the calculations in the test method for lighting occupancy sensors and controls were based on the potential reduction in energy consumption associated specifically with lighting occupancy sensors and schedule-based controls. DOE believes that applying these same ''time off'' or ''time dimmed'' assumptions to other technologies may not be representative of their actual performance and would not be appropriate. DOE has not been able to identify any data related to the energy savings of lighting sensors that adjust case lighting based on ambient lighting. Because DOE is currently using a calculation method based on the estimated hours a lighting sensor will dim or turn off lights to calculate lighting energy savings, it would be difficult to incorporate provisions for other types of sensors without data regarding their anticipated or realized efficacy. In the absence of such data, it is difficult for DOE to estimate a representative energy savings from ambient light sensors. Therefore, DOE does not intend to include provisions for ambient light sensors or other sensor technologies in the definition of lighting sensors and/or controls.

With respect to Southern Store Fixtures' comment that DOE should assess the environmental impact of manufacturing lighting occupancy sensors and weigh the impact against the achieved savings, DOE believes lighting occupancy sensors have proven effective over their lifetime and can save energy when installed on commercial refrigeration equipment. DOE will assess the environmental impact of lighting occupancy sensors in the energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003). However, DOE notes that life-cycle environmental impacts of equipment manufacture and disposal are typically outside the scope of the environmental impact analysis performed in any standards rulemaking.

b. Manual Controls

In the November 2010 NOPR, DOE's definitions of ''lighting control'' and ''lighting occupancy sensor'' both dealt exclusively with automatic technologies. 75 FR 71611 (Nov. 24, 2011). At January 2011 NOPR public meeting, AHRI and Zero Zone commented that it was inconsistent for DOE to allow night curtains that must be deployed manually to achieve energy savings in the DOE test procedure, but not to allow manual light switches to

[18] The EER of a particular cooling device is a measure of its relative efficiency, expressed as the ratio of the cooling output to the energy consumed.

receive credit for energy savings. (AHRI, No. 19 at p. 152; Zero Zone, No. 19 at p. 160)

While DOE acknowledges that manual switches can be used to dim or turn off case lighting to save energy when a store is closed, DOE is not aware of any data that substantiate their use. Because DOE does not have any data on which to base the treatment of manual switches, including a provision for manual light switches in the test procedure would be very speculative. In addition, DOE has observed that most cases spanning the full range of efficiencies currently available on the market already include manual light switches installed. In contrast, night curtains and other automatic lighting controls technologies are sold as energy efficiency features incorporated into only higher efficiency commercial refrigeration equipment. Further, manual switches have been installed on cases for some time as a utility feature, to turn off lights when replacing light bulbs for example, rather than as an energy saving feature.

Lacking data that substantiate the use of manual switches to save additional energy, and given the fact that manual light switches are a baseline technology and are not installed to produce energy savings, DOE is not including manual switches in the definition of a lighting control technology.

c. Remote Lighting Controls

In the November 2010 NOPR, DOE proposed that remote lighting control systems would not receive credit for any potential energy savings in the DOE test procedure. 75 FR 71605 (Nov. 24, 2010). California Codes and Standards commented that some scheduled lighting controls are external to the case, and inquired whether cases in which the controls were installed external to the case would receive credit under the proposed test procedure. (California Codes and Standards, No. 13 at p. 5) California Codes and Standards suggested that DOE clearly state that the credit for time switch control would only apply when the switch is on-board the display case. (California Codes and Standards, No. 19 at p. 187) As part of the rulemaking for the CRE energy conservation standards (Docket No. EERE–2010–BT–STD–0003), DOE published the Notice of Public Meeting and availability of the CRE Preliminary Analysis Technical Support Document (76 FR 17573 (March 30, 2011)) and held a public meeting on April 19, 2011 at DOE headquarters in Washington, DC During the commercial refrigeration equipment preliminary analysis public meeting (April 2011 Preliminary Analysis public meeting) and in subsequent written comments, numerous interested parties stated that many cases were installed with remote lighting sensors or controls that were operated at the aisle or store level. (Docket No. EERE–2010–BT–STD–0003, Southern Store Fixtures, No. 31 at pp. 190–91, 194; Zero Zone, No. 31 at p. 196; California Investor Owned Utilities,[19] No. 42 at p. 4) NEEA responded that cases wired uniquely to receive a remote energy management system should receive credit in the DOE test procedure. (Docket No. EERE–2010–BT–STD–0003, NEEA, No. 31 at p. 195)

There are several ways in which a manufacturer, refrigeration contractor, or store owner can implement lighting controls, including individual case controls, single controls serving an entire case lineup, and storewide energy management systems. Including remote lighting controls in the test procedure could inadvertently set a precedent for deeming remote energy management technologies to be part of the covered equipment and allocating energy savings gained by these external devices to associated pieces of equipment. For example, a remote lighting control system may control systems other than commercial refrigeration equipment, and such systems are typically not sold with a piece of commercial refrigeration equipment. Cases set up to interact with these remote control systems have a dedicated circuit for lights so that the lights can be controlled separately from the rest of the case. However, this lighting circuit configuration does not inherently save energy and must be paired with an energy management control system. These energy management systems are sold separately from the piece of commercial refrigeration equipment, may be produced by a different manufacturer from the one that produces the case, and are not integral to the commercial refrigeration equipment.

DOE acknowledges that remote lighting controls do save energy and may be the more commonly used technology to dim or turn off lights in the field. However, energy consumption for a piece of commercial refrigeration equipment must be determined using the DOE test procedure on a representative unit, as shipped from the point of manufacture. 76 FR 12422, 12453 (March 7, 2011) Because a remote energy management system is not part of the piece of equipment as shipped from the manufacturer, but rather it is a separate piece of equipment that may be supplied by a separate manufacturer, remote energy management controls will not be considered in this test procedure final rule.

d. Representative Energy Savings

In addition to conserving energy directly through decreased lighting electrical load, occupancy sensors also decrease the heat load from lights that are located inside the refrigerated space of refrigeration equipment. Therefore, as part of the calculation method for lighting occupancy sensors and controls, DOE proposed a calculation method to account for these energy impacts in the November 2010 NOPR. 75 FR 71602–05 (Nov. 24, 2010). This calculation, as proposed, quantifies the reduced compressor energy use resulting from lighting occupancy sensors and scheduled controls and relies on a table of fixed compressor EERs, as described below.

$$CEC_A = 0.75 \times \frac{3.4121 \times \left(LEC_{sc} - P_{li} \times {}^{t_l}/_{1000}\right)}{EER}$$

Where:

CEC_A = alternate compressor energy consumption (kilowatt-hours);

LEC_{sc} = lighting energy consumption of internal case lights with lighting occupancy sensors and controls deployed (kilowatt-hours);

P_{li} = rated power of lights when they are fully on (watts);

t_l = time lighting would be on without lighting occupancy sensors or controls (24 hours); and

EER = energy efficiency ratio from Table 1 in AHRI Standard 1200–2010 for remote condensing equipment and the values shown in Table III.1 of this document for self-contained equipment (British thermal units per watt (Btu/W)).

[19] ''California Investor Owned Utilities'' refers here to a joint comment submitted by Southern California Edison, Pacific Gas and Electric Company, Southern California Gas Company, and San Diego Gas and Electric in Docket No. EERE–2010–BT–STD–0003.

TABLE III.1—EER FOR SELF-CONTAINED COMMERCIAL REFRIGERATED DISPLAY MERCHANDISERS AND STORAGE CABINETS

Operating temperature class	EER *Btu/W*
Medium	11.26
Low	7.14
Ice Cream	4.80

Notes:

1. EER values for operating temperature classes are calculated based on the average EER value of all equipment in that class, analyzed as part of the previous energy conservation standards rulemaking for commercial refrigeration equipment (2009 rulemaking). 74 FR 1092 (Jan. 9, 2009). This does not include equipment for which standards were set by Congress in EPACT 2005 (VCT, VCS, HCT, HCS, and SOC at medium (M) and low (L) temperatures) or classes for which standards were set using extension multipliers in the 2009 rulemaking (VOP.SC.L, SVO.SC.L, VOP.SC.I, SVO.SC.I, HZO.SC.I, VOP.SC.I, SVO.SC.I, HZO.SC.I, HCS.SC.I, SOC.SC.I). This nomenclature is described in the 2009 rulemaking. 74 FR1093.

2. These values only represent compressor EERs and do not include condenser fan energy use.

Southern Store Fixtures stated that assigning average values for the EER in the calculation of energy reduction due to lighting occupancy sensors would penalize manufacturers that have more efficient compressors. (Southern Store Fixtures, No. 19 at p. 170) NEEA stated that not including the condenser fan energy consumption in the EER value creates an over-credit for any heat load that is not imposed on the case, and agreed with Southern Store Fixtures that this approach gives more credit to less efficient compressors. (NEEA, No. 19 at p. 171) NEEA further stated that, while it has no issue with the direct savings from lighting controls as proposed in the test procedure, it does not support the proposed method for calculating indirect energy savings. First, according to NEEA, DOE should account for condenser fan energy use. Second, NEEA disagreed with the compressor EER values in the November 2010 NOPR because the values are carried out to two decimal places, which NEEA described as unnecessary. Third, NEEA stated that light-emitting diode lighting would lessen the impact on compressor loads. Fourth, NEEA disagreed with the idea that a single factor be used for discounting lighting heat load, instead suggesting that this factor varies by case type. (NEEA, No. 8 at p. 5) California Codes and Standards also suggested that DOE research and incorporate different multiplicative factors for alternate compressor energy consumption for open versus closed cases, because a lower factor may be appropriate for open cases. (California Codes and Standards, No. 13 at pp. 4–5)

With respect to its compressor EER values, DOE believes that the same values can be used for all self-contained equipment because compressor efficiency is primarily a function of compressor design for a given combination of load, product temperature, and ambient conditions, rather than a specific case geometry. In addition, as a precedent, Table 1 in AHRI 1200–2010 provides EER values for remote condensing equipment that are not specifically directed toward either open or closed refrigerated cases. DOE recognizes that the EER values presented in the November 2010 NOPR are not exact quantitative representations of specific compressor designs on the market, and that compressor performance will vary based on compressor manufacturer and model, operating conditions, and the overall design of the specific refrigeration system in which the compressor is used. However, DOE believes that the EER values it proposed are sound representations of default compressor performance available in the marketplace today that, when applied equally to all equipment, will yield a consistent and repeatable result. DOE acknowledges that two decimal points is not appropriate for these default values and has revised them to the nearest whole number for this final rule. (*See* the amendments to 10 CFR 431.64 (b)(2)(iii), following this preamble).

In response to comments that DOE did not account for condenser fan energy consumption, DOE assumed the compressor fan runs continuously in self-contained equipment in the calculations for reduced compressor energy consumption resulting from the use of lighting occupancy sensors and scheduled controls. This assumption may slightly underestimate the savings in some cases, but DOE believes it adequately represents expected energy savings in the field. DOE agrees that it is important that the default compressor EER values not exaggerate energy savings or disincentivize energy efficiency in compressors. However, because these values are applied to all commercial refrigeration equipment, regardless of actual performance, DOE does not believe the default values will affect or motivate compressor selection or design, as they will produce comparable results across all systems to which they are applied.

Because DOE is allowing the option of a physical test to determine savings from lighting occupancy sensors and controls (see section III.A.3.e), DOE must be cognizant of the fact that the calculated reduction in refrigeration load and associated indirect energy savings are comparable to those that would be measured in the physical test. In revising the EER values, DOE has also attempted to ensure that the default values do not result in greater savings than would be achieved if a case with an efficient compressor were tested. Because the calculation does not account for reduced compressor fan power or heat leakage from the compressor into the case, DOE believes that the EER values will not significantly overestimate indirect lighting energy savings. In addition, because the physical test method is optional, a manufacturer may always choose to use the calculation method, which is consistent across all equipment.

e. Optional Physical Test

In the November 2010 NOPR, DOE proposed a calculation method to account for the energy savings due to the use of lighting occupancy sensors or controls. DOE proposed a calculation method because it believed it would be representative, consistent, and relatively less burdensome for manufacturers compared to a physical test. In this assessment, DOE accounted for the fact that manufacturers may need to conduct tests with lights on for the duration of the test for other programs, for example for ENERGY STAR® [20] certification. 75 FR 71600, 71605 (Nov. 24, 2010).

At the January 2011 public meeting and in subsequent written comments, Coca-Cola, NEEA, and California Codes and Standards suggested that DOE allow optional empirical testing for the energy reduction associated with lighting controls. (Coca-Cola, No. 19 at p. 172; NEEA, No. 19 at p. 175; California Codes and Standards, No. 13 at p. 5) Earthjustice stated that the method proposed in the November 2010 NOPR ignores condenser fan energy use, underestimates compressor EER, and uses a fixed discount factor for the lighting heat load that, in actuality, would vary by unit. Earthjustice further stated that testing with lighting off or dimmed would resolve this issue without adding additional burden. (Earthjustice, No. 11 at p. 2) NEEA agreed with Earthjustice and commented that actual testing of lighting controls would be a superior way to account for their impacts, and

[20] ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and DOE that establishes a voluntary rating, certification, and labeling program for highly energy efficient consumer products and commercial equipment. Information on the program is available at *www.energystar.gov/index.cfm?c=home.index*.

that DOE should either require testing or make it optional rather than relying solely on calculations. (NEEA, No. 8 at pp. 5–6)

ACEEE commented that alternative lighting methods, for example fiber bundles, could be developed, and that the DOE test procedure should provide a way for lighting vendors to capture the energy savings of new, innovative lighting technologies so that they can promote the technology to case manufacturers. (ACEEE, No. 19 at p. 173)

Hussmann Corporation (Hussmann) cautioned that the DOE test procedure should be cognizant of the repeatability of test results using a physical test method, specifically when units are tested at third-party laboratories. (Hussmann, No. 19 at p. 175) Traulsen commented that physically testing the energy reduction of lighting occupancy sensors and scheduled controls could be done with a $20 to $60 timing device, which translates to approximately $100 when accounting for markups. Traulsen added that $100 could be problematic for some small manufacturers. (Traulsen, No. 19 at p. 177)

DOE agrees with NEEA and Earthjustice that an optional physical testing method would be more representative of actual condensing unit energy reduction for a given case. However, DOE also agrees with Traulsen that physical testing should be an optional method due to the increased burden associated with additional testing. In response to Hussmann's comment, DOE believes the test procedure amendments for lighting occupancy sensors and scheduled controls adopted in this final rule, which allow for use of the calculation method or performance of a physical test, are sufficiently repeatable for the purpose of showing compliance with DOE energy conservation standards. Thus, in this test procedure final rule, DOE is incorporating provisions that allow manufacturers to choose either the calculation method or a physical test to demonstrate and credit energy savings associated with lighting occupancy sensors and scheduled controls. DOE believes that continuing to provide a calculation method for lighting occupancy sensors and controls is a less burdensome and more consistent method to account for the energy savings associated with these technologies. Nonetheless, if a manufacturer wishes to account for the energy reduction associated with lighting occupancy sensors and controls through physical testing, DOE is specifying that a physical test may be performed. The physical test will be prescribed as ''optional'' to allow the use of a calculation method to reduce burden on manufacturers and provide flexibility in the rating of equipment. In response to ACEEE's comment regarding the treatment of innovative new lighting technologies, DOE believes the optional physical test will allow manufacturers to measure the energy consumption of any new lighting technology that cannot be characterized by the calculation method. In either case, manufacturers will be expected to record which test method, calculation or physical, was used to determine the energy consumption of the equipment and to keep this information as part of the data underlying the certification. For DOE-initiated testing, DOE will run the optional physical test.

4. Inclusion of a Provision for Testing at Lowest Application Product Temperature

DOE has developed equipment classes based on three distinct temperature categories: (1) refrigerators that operate at or above 32 °F and are tested at an integrated average temperature of 38 °F (±2 °F); (2) freezers that operate below 32 °F and above −5 °F and are tested at an integrated average temperature of 0 °F (±2 °F); and (3) ice-cream freezers that operate at or below −5 °F and are tested at an integrated average temperature of −15 °F (±2 °F). 10 CFR 431.66(d)(1)

During the May 2010 Framework public meeting, several parties commented that some equipment covered under this rulemaking is designed to operate at significantly higher temperatures than the designated temperature for the corresponding equipment class. Specifically, California Codes and Standards stated that DOE should review test methods for niche equipment that may require different temperature criteria and schedules. (Docket No. EERE–2010–BT–STD–0003; California Codes and Standards, No. 5 at p. 3) Structural Concepts also stated that some types of equipment, such as candy and wine cases, operate at 55 or 60 °F, yet would have to be tested at 38 °F to meet an energy conservation standard, which is problematic because these units are not designed to operate at that temperature. (Docket No. EERE–2010–BT–STD–0003; Structural Concepts, No. 6 at p. 59)

AHRI Standard 1200–2010 includes provisions for such equipment to be rated at the application product temperature. To accommodate equipment that operates at temperatures much greater than the 38 °F (±2 °F) rating temperature, in the November 2010 NOPR DOE proposed including a provision for testing refrigerators that cannot operate at the prescribed 38 °F (±2 °F) integrated average rating temperature, permitting them to be tested at the lowest application product temperature. In the November 2010 NOPR, ''lowest application product temperature'' was defined as ''the lowest integrated average product temperature achievable and maintainable within ± 2 °F for the duration of the test.'' 75 FR 71605 (Nov. 24, 2010). DOE clarified that, for equipment rated at the lowest application product temperature, the integrated average temperature achieved during the test should be recorded, and that equipment tested at the lowest application product temperature would still be required to comply with the applicable standard for its respective equipment class. 75 FR 71605 (Nov. 24, 2010). DOE received several comments related to (1) the definition of lowest application product temperature; (2) expanding the definition of lowest application product temperature to include freezers and ice-cream freezers that cannot operate at the specified rating temperatures; (3) the energy conservation standard for equipment tested at the lowest application product temperature; and (4) how the provision for lowest application product temperature would accommodate remote condensing equipment. The specific comments and DOE's responses are provided in the subsequent sections.

a. Definition of Lowest Application Product Temperature

In comments received during the November 2010 NOPR comment period, NEEA stated that lowest application product temperature could be defined as the lowest temperature setting on the thermostat, and that DOE needs to better define what the lowest temperature is and how it is determined. (NEEA, No. 19 at p. 213) True responded that the lowest application product temperature is based on a number of factors and that units should be tested at the lowest set point. (True, No. 19 at p. 214) NEEA also stated that, due to the differences in types, applications, and configurations for application-temperature equipment, DOE must establish test procedures for this equipment that address the way that they are designed and controlled, as well as the ambient conditions in which they are operated, regardless of the shipment volume, in accordance with EPCA. (NEEA, No. 8 at p. 6) ACEEE commented that the lowest application temperature should be standardized, and inquired whether manufacturers would be able to test to any temperature

they want, or if the lowest application product temperature will be restricted to one or a few values. ACEEE added that equipment comparison would be difficult if there is no standardization. (ACEEE, No. 19 at pp. 217 and 219)

DOE believes that ''the lowest thermostat setting'' may not be a prescriptive enough definition in all cases. In some cases, the CRE does not contain an adjustable thermostat, which can be manually changed for testing. DOE agrees with True that the lowest application product temperature is based on a number of factors and cannot be limited to one CRE accessory. DOE intends to provide manufacturers with the flexibility to determine the lowest application product temperature for a given case only when the CRE cannot be tested at the specified rating temperatures. The phrase ''lowest application product temperature'' is also consistent with the nomenclature used in the Canadian energy efficiency regulations and test procedures for self-contained commercial refrigerators, freezers, and refrigerator freezers, established by Natural Resources Canada.[21] In most cases with thermostats, DOE agrees that the lowest application product temperature is, in fact, the lowest thermostat set point.

In response to ACEEE's comments, DOE is not restricting the lowest application product temperature to specific values. To qualify to use the lowest application product temperature for a certain piece of equipment, a manufacturer should be confident that any case tested under that equipment rating could achieve the specified lowest application product temperature within ±2 °F and could not be tested at the rating temperature for the given equipment class. Further, manufacturers should clearly document any variation in rating temperature setting in the test data they maintain underlying the certification of each basic model. In this test procedure final rule, DOE has better defined how the proper test temperature is to be determined and has clarified that, for many pieces of equipment, this will be the lowest temperature setting on the unit's thermostat. DOE agrees with commenters that it is important to designate equipment tested using the lowest application product temperature provision to ensure they are not incorrectly compared with units that are tested at the specified rating temperature. While DOE is not modifying the certification requirements in this final rule to require manufacturers to report the temperature at which the unit was tested (if other than the rating temperature), DOE is requiring that documentation be maintained as part of the test data underlying the certification. Further, the certified ratings calculated from the test data and applicable sampling plans should reflect the energy consumption measured at the lowest application product temperature setting.

b. Extension of Lowest Application Product Temperature Rating to All Equipment Classes and Rating Temperatures

At the January 2011 NOPR public meeting, several interested parties commented that there is a second category of equipment, including ice storage cases operating at 20 °F, that are unable to be tested at the prescribed rating temperature for freezers, or 0 °F (±2 °F). The commenters suggested that the provisions for testing at the lowest application product temperature should be expanded to freezers and ice-cream freezers to accommodate equipment that cannot be rated at the prescribed test temperature for its equipment class. (True, No. 19 at p. 191; Hussmann, No. 19 at pp. 192–93; Traulsen, No. 19 at p. 194; Zero Zone, No. 16 at p. 2; AHRI, No. 15 at pp. 2–3) Hussmann added that a case designed for 20 °F that is not required to be designed to be tested at 0 °F (±2 °F) for certification would be more efficient overall. (Hussmann, No. 19 at pp. 192–93)

DOE also has noticed that some equipment may not be able to be tested at the prescribed rating temperature because the operating temperatures are below the specified rating temperature (*e.g.,* a piece of commercial refrigeration equipment that operates at temperatures between 32 and 36 °F and cannot be tested at an integrated average temperature of 38 °F).

DOE understands that some equipment cannot be tested at its prescribed rating temperature and is adopting provisions in this final rule to accommodate testing for those units at the lowest application product temperature. In response to interested parties' comments regarding equipment that operates at, for example, 20 °F, and thus falls into the freezer temperature range, but is not able to be tested at the prescribed rating temperature for freezers, 0 °F (±2 °F), DOE is expanding the ''lowest application product temperature'' provision to freezers and ice-cream freezers. With regard to differentiation of equipment that was tested at the specified rating temperature, DOE is requiring manufacturers to maintain documentation of the temperature at which the unit was tested (if other than the DOE prescribed rating temperature) as part of the test data underlying the certification, as well as base any certified ratings on the energy consumption of the equipment as determined using the lowest application product temperature test procedure.

DOE also notes that while some equipment theoretically may not be able to be tested at the prescribed rating temperature because it operates at temperatures lower than the specified rating temperature and cannot reach the specified rating temperature, DOE is not aware of this occurring in any equipment that is currently marketed and sold in the United States, and DOE believes there is little possibility of this occurring. To provide clarity in differentiating equipment that cannot be rated at the prescribed rating condition, DOE will continue to refer to this provision as the ''lowest application product temperature.'' However, to account for all possible temperature ranges of equipment, DOE is defining the ''lowest application product temperature'' as ''the temperature closest to the equipment's specified rating temperature that the unit can achieve (±2 °F).'' In this case, ±2 °F refers to the repeatability of the lowest application product temperature.

c. Energy Conservation Standard for Equipment Tested at the Lowest Application Product Temperature

In the November 2010 NOPR, DOE proposed that equipment tested at the lowest application product temperature still be required to comply with the standard for its respective equipment class. 75 FR 71605–06 (Nov. 24, 2010). DOE made this proposal due to the small fraction of equipment that DOE expects to be rated using the lowest application product temperature provision. DOE analyzed the shipments data provided by ARI during the Framework comment period of the 2009 energy conservation standards rulemaking. (Docket No. EERE–2006–BT–STD–0126, ARI, No. 7 Exhibit B at p. 1). DOE found that, excluding that equipment for which EPACT 2005 amended EPCA to set standards (*i.e.,* self-contained commercial refrigerators and commercial freezers with doors) (42 U.S.C. 6313(c)(2)), only 1.7 percent of units for which standards were established operate at ''application temperatures,'' namely 45 °F, 20 °F, 10 °F, or − 30 °F. Of these, units that operate at 45 °F (typically ''wine chillers'') had the highest shipments, and these units were predominantly remote condensing equipment. Given

[21] Natural Resources Canada, Office of Energy Efficiency. ''Energy Efficiency Regulations.'' *Canada Gazette.* Part I; June 2010.

the relatively low shipment volumes of equipment that operates at application temperatures, DOE did not believe it was justified in developing separate standards for equipment that operates at an application temperature different than one of the three prescribed rating temperatures. 74 FR 1104 (Jan. 9, 2009).

At the January 2011 NOPR public meeting and in written comments submitted during the public comment period, many interested parties commented on DOE's proposal that equipment tested at the lowest application product temperature would still be required to comply with the standard for its respective equipment class. California Codes and Standards, ACEEE, NEEA, and NRDC all agreed that it is reasonable to test equipment not capable of achieving a rating temperature at its lowest operating temperature, provided this equipment represents a small market share and is appropriately differentiated to prevent loopholes. (California Codes and Standards, No. 13 at p. 5; ACEEE, No. 12 at p. 5; NEEA, No. 8 at pp. 6–7; NRDC, No. 14 at pp. 1–2) NRDC suggested that equipment that cannot be tested below 38 °F should be labeled and sold with its projected annual energy consumption data indicating the lowest temperature achievable during testing, and should be clearly differentiated from equipment that meets the required testing temperatures. (NRDC, No. 14 at p. 2) ACEEE suggested that DOE define equipment classes in a manner that prevents the substitution of less efficient equipment for more efficient general-duty equipment. (ACEEE, No. 12 at pp. 1–2) ACEEE also expressed concern regarding the presence of ice cabinets on the market, and questioned how DOE could differentiate ice cabinets from freezers if they are rated at application temperature, so that they are not used inappropriately for frozen food storage. (ACEEE, No. 12 at p. 5) NEEA disagreed with DOE's tendency to refer to equipment with application temperatures above 38 °F as ''medium temperature'' because some of this equipment operates at significantly higher temperatures than the medium temperature rating condition of 38 °F. Therefore, NEEA suggested that this equipment be referred to as ''high or elevated temperature'' equipment. Additionally, NEEA asserted that ice storage cabinets, or any other equipment operating at an operating temperature between 0 °F and 38 °F, should not be called ''medium'' or ''low'' temperature. (NEEA, No. 8 at pp. 6–7)

True asked whether ice chests or freezers that are designed to operate at 20 °F and cannot be tested at 0 °F (±2 °F) would be required to meet the refrigerator or the freezer energy conservation standard. (True, No. 19 at p. 207) California Codes and Standards and NRDC also stated that the standard levels should be correspondingly adjusted to avoid loopholes, as otherwise, less efficient equipment potentially could comply if it were allowed to be tested at a higher operating temperature. (California Codes and Standards, No. 13 at p. 5; NRDC, No. 14 at pp. 1–2) California Codes and Standards suggested that DOE create a method to scale standards based on rating temperature, and stated that this would not require additional equipment classes. (California Codes and Standards, No. 19 at pp. 223 and 227) NRDC stated that, while DOE's past reasoning for not setting specific requirements for application-temperature equipment was based on the small size of the market, a forward-looking standard should include this equipment and set efficiency levels for it. (NRDC, No. 14 at p. 2) Sean Gouw (unaffiliated) commented that DOE had created product classes for niche products with low market share before, for example built-in residential refrigerators. (Gouw, No. 19 at p. 234)

AHRI commented that refrigerated cases that cannot operate at an integrated average temperature of 38 °F are niche products and represent a small part of the market. (AHRI, No. 19 at p. 228) Southern Store Fixtures commented that cases rated for higher temperatures do not necessarily use less energy because they may require additional heaters for humidity control. (Southern Store Fixtures, No. 19 at p. 229)

DOE maintains that units tested at the lowest application product temperature will still be required to meet the applicable energy conservation standard based on their equipment class. While DOE understands that this approach may result in slightly less stringent standards for the small number of units that cannot be tested at the prescribed rating temperatures, as interested parties pointed out, DOE does not believe that establishing separate equipment classes for these niche types of equipment would be justified given their small shipment volume and the wide diversity of niche products.

DOE agrees with interested parties that preventing loopholes that would allow less efficient equipment to be sold is very important. However, DOE believes that allowing testing at the lowest application product temperature for all temperature classes allows for coverage of more equipment and may allow ''intermediate'' equipment that cannot operate at its prescribed test temperatures to be designed to operate more efficiently. It is not expected that this will create an opportunity for less efficient equipment to be sold because DOE is requiring units tested at the lowest application product temperature to be retested if the thermostat is changed.

California Codes and Standards also suggested scaling the energy consumption data for equipment tested at application temperatures to reflect projected energy consumption at the relevant rating temperature. (California Codes and Standards, No. 19 at pp. 223 and 227) However, DOE agrees with Southern Store Fixtures that testing these units at a higher integrated average temperature does not necessarily mean that the unit will use less energy. The variability in energy use and the impact of variation in integrated average temperature will depend on case type, geometry, and configuration. This makes it very difficult to set a consistent scaling factor or incorporate temperature into the standards equations, as any value chosen would be not be representative of all cases. This issue will be discussed further in the energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003).

With respect to NEEA's suggestion that equipment rated at lowest application product temperature be referred to as ''high or elevated temperature'' equipment, DOE cannot control how equipment is referred to or categorized in the market beyond the equipment classes DOE specifies. Since DOE is not creating a unique equipment class for this equipment, DOE will continue to categorize the equipment based on its appropriate equipment class.

d. Remote Condensing Units and the Lowest Application Product Temperature

In the November 2010 NOPR, DOE proposed that the lowest application product temperature provision apply equally to self-contained and remote condensing commercial refrigeration equipment. 75 FR 71605 (Nov. 24, 2010). AHRI inquired how the lowest application product temperature would apply to remote condensing equipment, because the lowest operating temperature for remote condensing equipment is dependent on the condensing unit to which it is attached. (AHRI, No. 19 at p. 203) Zero Zone commented that the approach for testing equipment at the lowest application product temperature was reasonable for

self-contained equipment, but for remote condensing equipment, the size of the condensing unit would affect the operating temperature range. Zero Zone further inquired whether the test procedure would regulate the size of condensing units. (Zero Zone, No. 19 at p. 207) Zero Zone stated that there needs to be more specificity in the testing of application temperature for remote condensing equipment. Zero Zone continued by asserting that ASHRAE 72 requires that a pressure regulator be used to set the evaporating temperature to the correct value. This means that the limit of evaporating temperature is dependent on the size of the test laboratory's compressor rack. Zero Zone suggested that, for standardization purposes, the DOE test procedure should require that the saturated suction temperature be set to 5 °F colder than the temperature needed to maintain the application temperature. (Zero Zone, No. 16 at p. 2)

DOE has reviewed Zero Zone's comment and the pertinent sections of ASHRAE Standard 72. DOE concedes that, for remote condensing equipment that does not have a thermostat or another means to regulate temperature, the size of the compressor rack could impact the lowest achievable application product temperature. In this case, the saturated suction temperature at the compressor rack (also referred to as the Adjusted Dew Point Temperature in AHRI 1200–2010) impacts the amount of refrigerant that can flow through the evaporator. Larger compressor racks are able to achieve lower saturated suction temperatures, which will produce a lower operating temperature in the case than a smaller compressor. DOE acknowledges that the method included in Zero Zone's comment would create a standardized repeatable test for this type of equipment. However, DOE believes that the specification of a saturated suction temperature to 5 °F lower than that required to maintain the application temperature is somewhat arbitrary and not necessarily indicative of the lowest operating temperature of the unit. This specification also could inadvertently restrict or burden manufacturers when testing their equipment. DOE did not receive comments from other manufacturers on this topic. DOE also notes that specification of a fixed saturated suction temperature is only required for remote condensing units without thermostats or other means of regulating temperatures that are rated at the lowest application product temperature. DOE is not currently aware of any equipment on the market that would fit this description.

In the case of remote condensing equipment with a thermostat, DOE believes that the lowest application product temperature is sufficiently defined by the range of the thermostat and that the suction temperature is similarly limited by the thermostat. However, for remote cases that do not have a thermostat or other means for controlling temperature at the case level, DOE acknowledges that this relationship between compressor rack size and lowest application product temperature does create some variability in the lowest application product temperature that can be achieved by a given case. Thus, DOE is requiring that the adjusted dew point temperature, as defined in AHRI 1200–2010, be set to 5 °F colder than that temperature required to maintain the manufacturer's lowest specified application temperature for those pieces of remote condensing commercial refrigeration equipment that do not have a means for controlling temperature at the case, such as a thermostat, and cannot be tested at their specified integrated average rating temperatures.

5. Provisions Allowing Testing of Equipment at NSF Test Temperatures

Commercial refrigeration equipment that is marketed to hold perishable food items is classified and certified by NSF/ANSI–7, ''Commercial Refrigerators and Freezers'' (hereafter referred to as NSF–7), a food safety standard issued by NSF.[22] NSF–7 establishes two classes for commercial display cases: Type I, which is tested at ASHRAE Standard 72 standard ambient conditions (75 °F dry bulb and 64 °F wet bulb temperature), and Type II, which is tested at higher ambient conditions (80 °F dry bulb and 68 °F wet bulb temperature). These two test conditions are also reported in terms of dry bulb temperature and percentage relative humidity. Type I corresponds to 75 °F and 55 percent relative humidity, and Type II corresponds to 80 °F and 60 percent relative humidity. NSF–7 also requires Type I and Type II equipment to be tested such that the average temperature of each test package containing an individual temperature sensor does not exceed 41 °F and no single temperature sensor exceeds a reading of 43 °F at any time during the test. NSF–7 does not specify a required average temperature for all test sensors or the measurement of energy consumption during the test. On the other hand, DOE does require an integrated average test temperature of 38 °F ± 2 °F. However, manufacturers have reported that they test cases at lower integrated average temperatures than that specified by DOE to ensure the NSF–7 requirements are met.

At the January 2011 NOPR public meeting and in subsequent written comments, interested parties commented on the similarities and differences between the DOE test procedure and the NSF–7 test. Commenters also noted the additional burden associated with performing both tests. Southern Store Fixtures commented that if a unit designed to operate at higher ambient conditions is operated at a lower ambient temperature, the case will not perform as well because it will have an oversized compressor and could have operational issues with compressor cycling. Southern Store Fixtures further commented that the energy consumption of a case can increase by as much as 30 percent when changing from a rating condition of 75 °F and 55 percent relative humidity to 80 °F and 60 percent relative humidity. (Southern Store Fixtures, No. 19 at pp. 94–95) True and Coca-Cola stated that a 5 °F difference will not significantly affect energy consumption and that, for those few cases that would be significantly affected, they could apply for a waiver. (True, No. 19 at p. 122; Coca-Cola, No. 19 at p. 123) Southern Store Fixtures countered that only in cases with solid doors will the 5 °F temperature difference be insignificant (Southern Store Fixtures, No. 19 at p. 131), and that the effects of a 5 °F increase in temperature can be significant for open cases or cases with single pane glass. (Southern Store Fixtures, No. 19 at p. 97)

Hussmann stated that, although the difference in energy use among self-contained cases may not be significant, Hussmann was concerned with the additional burden of testing a case twice. (Hussmann, No. 19 at p. 123) Hussmann stated that all units must pass the NSF–7 requirements in order to be certified for food safety. The NSF–7 requirement differs from AHRI 1200 in that the maximum average temperature can never exceed 41 °F at any time. Hussmann also stated that the integrated average temperature for the NSF–7 test (approximately 34 °F) is actually lower than that required by the DOE test procedure, and that the energy consumption of a medium temperature self-contained case is higher during testing for NSF compliance than it is during the DOE energy consumption

[22] NSF International. ''NSF/ASNI 7—2009: Commercial Refrigerators and Freezers.'' Ann Arbor, MI. *http://www.nsf.org/business/food_equipment/standards.asp.*

test. Hussmann commented that, as it stands now, equipment that consumes more energy during the NSF–7 test than is allowed by the DOE test procedure would have to be re-tested at DOE conditions, thereby imposing an additional burden. Hussmann stated that 85 percent of its self-contained models require NSF testing, meaning that hundreds of additional DOE tests could be required. (Hussmann, No. 10 at pp. 1–2) Hussmann recommended that DOE allow for the use of a linear polynomial curve-fit in the development of a normalization equation from NSF to DOE internal temperatures. This would allow manufacturers test at NSF internal conditions and then normalize to the standard DOE conditions, which would reduce the testing burden because manufacturers already test to the NSF standard. (Hussmann, No. 10 at p. 2)

California Codes and Standards and NEEA both suggested that DOE allow testing at both the 75 °F and 55 percent relative humidity rating condition and NSF Type II conditions, provided the case, as tested, were to meet the applicable energy conservation standard. (California Codes and Standards, No. 19 at p. 124; NEEA, No. 19 at p. 127) ACEEE stated its belief that commercial refrigeration equipment can be divided into two types of equipment: that for which food safety is a true concern, and that which cools and displays product for the purposes of presenting value to the consumer. The former subset of equipment is rated in accordance with NSF food safety standards, while the latter is not. Therefore, ACEEE suggested making a distinction between the two in the DOE test procedure, with the NSF–7 test procedure being used for equipment for which food safety is a true concern, and the AHRI/ASHRAE method being used for the remaining equipment. ACEEE stated that it would endorse such a method as long as the two subsets of equipment were separated clearly, such as via labeling. (ACEEE, No. 12 at pp. 2–3)

True stated that the current Federal test procedure relies on ASHRAE Standard 72, which specifies a rating condition of 75 °F and 55 percent relative humidity, and that this reflects the way cases are currently tested. True added that if the test temperatures were to be changed, comparison with historical data could be difficult. (True, No. 19 at pp. 127–28) True also acknowledged that self-contained cases currently required to meet the EPACT 2005 standard must test at the DOE rating condition of 75 °F and 55 percent relative humidity and, optionally, at NSF Type II conditions, so there is no incremental increase in burden. (True, No. 19 at p. 129)

DOE acknowledges the burden on manufacturers that have to certify equipment with both the DOE test procedure and the NSF–7 test procedure. DOE also agrees with interested parties that testing cases at an ambient temperature of 80 °F, rather than the currently specified 75 °F, will not have a significant impact on energy consumption for cases with doors. DOE recognizes that, as Southern Store Fixtures mentioned, the impact on open cases may be greater than on closed cases, but does not believe that equipment will have operation or performance issues if tested at a the temperatures prescribed by the DOE test procedure. DOE believes the energy consumption of a case should scale with ambient temperature and does not believe these issues will prevent units from being tested using the DOE-prescribed test temperatures or demonstrating compliance with DOE energy conservation standards. DOE researched the equipment available on the market and requested specific data regarding the existence of cases that cannot meet the standard or the characteristics of their operation. DOE has found no evidence or firm data supporting the creation of a separate equipment class and standard for equipment designed to operate at higher ambient conditions. Thus, DOE will not create specific new equipment classes for equipment that is designed to operate at internal or ambient temperatures other than the test conditions prescribed by DOE.

DOE does not believe development of a scaling factor that would be sufficiently representative of equipment energy consumption and consistent across an equipment class is justified within the scope of this rulemaking. The geometry and design of each case will cause the magnitude of the impact of variation in temperature to vary, making development of any scaling factor extremely burdensome. This is true for both external and internal temperature variations.

Continuing to require testing at standard rating conditions, as prescribed in the DOE test procedure, without allowances for variation in internal or external temperatures, will not increase the burden for manufacturers. However, it will also not reduce the total burden of testing, which could be accomplished through coordination of test requirements with other programs, such as NSF.

In response to the suggestion that cases could optionally be tested at NSF–7 conditions (ambient or internal) as long as the unit, as tested, complies with the energy conservation standard, DOE believes that this will effectively reduce the burden on manufacturers while ensuring that all cases meet or exceed the DOE energy conservation standard, provided the NSF–7 rating temperatures and ambient conditions represent a more stringent test. In most cases, using the NSF internal temperature requirements or Type II external ambient conditions represents a more conservative test in that equipment will have to be more efficient to operate at NSF internal temperatures or ambient conditions and still comply with DOE energy conservation standards. For example, as Hussmann notes, manufacturers often perform the NSF–7 test at a lower integrated average temperature than that required by the DOE test procedure to ensure their cases will comply with NSF's food safety requirements. However, DOE notes that this method is optional, and manufacturers are technically allowed to test cases at up to 41 °F integrated average temperature under the NSF–7 test, provided the air is perfectly mixed and the spatial temperature variation within the case is very well controlled. In an effort to reduce burden for manufacturers and allow testing for the purposes of NSF certification and DOE compliance to occur in the same test, DOE is adopting in this final rule provisions that allow manufacturers to optionally use NSF internal or ambient conditions to test equipment in a given equipment class, provided the NSF conditions are more stringent than the prescribed DOE rating temperatures and conditions for that equipment class. To clarify, manufacturers may test at the prescribed 75 °F and 55 percent relative humidity ambient rating condition, or they may optionally test at the NSF Type II conditions of 80 °F and 60 percent relative humidity. In either case, the equipment would be required to show compliance with the relevant energy conservation standard for that equipment class. Additionally, manufacturers are allowed to test equipment at integrated average temperatures that satisfy the DOE-specified rating temperatures or are lower than the DOE-specified rating temperatures.

DOE acknowledges that allowing equipment to be tested at NSF–7 conditions in the DOE test procedure would make comparison of equipment within the same equipment class difficult and confusing, given that there could be cases tested at four different conditions in the same class. However, DOE is requiring that equipment rated at

NSF–7 rating temperatures maintain documentation of the internal and ambient temperatures as part of the test data underlying the certification, so that informed comparisons can be made.

As True acknowledged, manufacturers that produce equipment covered by EPACT 2005 standards are currently testing to both the DOE and NSF–7 test procedures. Thus, maintaining the proposed equipment classes and test temperatures for equipment that must also be tested using the NSF–7 test for food safety certification does not introduce any incremental burden on manufacturers. Instead, the provision to demonstrate compliance by testing the equipment at NSF–7 test conditions is only meant to provide an opportunity to the manufacturers to reduce the number of tests for equipment that can comply with DOE standards even when tested at the more stringent NSF–7 test conditions. However, this provision will not be advantageous to equipment that may be unable to comply by DOE standards when tested at the more stringent NSF–7 test conditions due to a large difference in energy consumption at the two different test conditions.

In summary, DOE is incorporating language in the test procedure final rule that will allow manufacturers to optionally test at NSF–7 conditions that are more stringent than the DOE test conditions to reduce the repetitive test burden of testing at both DOE and NSF–7 conditions, provided the case still meets DOE's energy conservation standards.

B. Other Notice of Proposed Rulemaking Comments and DOE Responses

At the January 2011 NOPR public meeting and in the ensuing comment period, DOE received comments from interested parties regarding several issues that pertain to the CRE test procedure and energy conservation standard rulemakings, but not to specific provisions or amendments. DOE received comments on the scope of covered equipment; the testing of part-load technologies not currently referenced explicitly in the test procedure; the effective date of the test procedure rulemaking; preemption of State regulations; the burden of testing; the association of this final rule with DOE's certification, compliance, and enforcement regulations; alternative refrigerants; and secondary coolant systems.

1. Equipment Scope

The test procedure for commercial refrigeration equipment prescribes methods for testing all commercial refrigeration equipment, as defined in 10 CFR 431.62. The definition of commercial refrigerator, freezer, and refrigerator-freezer includes all refrigeration equipment that:

(1) Is not a consumer product (as defined in § 430.2 of part 430);

(2) Is not designed and marketed exclusively for medical, scientific, or research purposes;

(3) Operates at a chilled, frozen, combination chilled and frozen, or variable temperature;

(4) Displays or stores merchandise and other perishable materials horizontally, semi-vertically, or vertically;

(5) Has transparent or solid doors, sliding or hinged doors, a combination of hinged, sliding, transparent, or solid doors, or no doors;

(6) Is designed for pull-down temperature applications or holding temperature applications; and

(7) Is connected to a self-contained condensing unit or to a remote condensing unit.

10 CFR 431.62

a. Remote Condensing Racks

California Codes and Standards commented that DOE should consider regulating remote condensing racks and that significant energy savings were possible in that type of equipment. (California Codes and Standards, No. 19 at p. 12) California Codes and Standards further asked DOE to review the pros and cons of establishing a separate rulemaking on remote condensers and to consider which parts of remote condensing equipment should be covered by energy conservation standards. These standards, the comment stated, would be well suited to establishing a baseline efficiency for the remote condensing unit, independent of the type of equipment it serves. (California Codes and Standards, No. 13 at pp. 1–2) ACEEE stated that DOE should recognize the distinction between dedicated remote condensing units and rack systems that serve multiple pieces of equipment. ACEEE suggested that DOE should develop an appropriate method for rating dedicated remote compressors across various capacities and temperature needs, potentially using standard loads for the testing of remote rack systems. (ACEEE, No. 12 at p. 5)

During the 2009 CRE energy conservation standards rulemaking, DOE made the determination not to cover remote condensers within the scope of the January 2009 final rule, and to limit the standards analyses to refrigerated cases only and not the remote condensers. In the advance notice of proposed rulemaking, DOE stated:

> In its Framework Document, DOE pointed out that EPCA defines a ''self-contained condensing unit,'' in part, as an assembly of refrigerating components ''that is an integral part of the refrigerated equipment * * *'' (42 U.S.C. 6311(9)(F), added by EPACT 2005, section 136(a)(3)) EPCA also defines a ''remote condensing unit,'' in part, as an assembly of refrigerating components ''that is remotely located from the refrigerated equipment * * *.'' (42 U.S.C. 6311(9)(E), added by EPACT 2005, section 136(a)(3)) DOE also stated in the Framework Document that this difference in the definitions may mean that, under EPCA, remote condensing units are not a part of the refrigerated equipment and that energy conservation standards for remote condensing commercial refrigerators, commercial freezers, and commercial refrigerator-freezers would apply only to the refrigerated equipment (i.e., storage cabinets and display cases), but not to the remote condensing units.

72 FR 41170–71 (July 26, 2007).

Several interested parties commented at that time that coverage of remote condensers would be difficult due to the wide variety of this type of equipment. (Docket No. EERE–2006–STD–0126, Zero Zone, Public Meeting Transcript, No. 3.4 at p. 48; [23] ARI, No. 7, at p. 3) Additionally, energy efficiency advocates and utilities expressed the opinion that these units should be covered, but not necessarily within the scope of that rulemaking. (Docket No. EERE–2006–STD–0126, Joint Comment,[24] No. 9 at p. 5) DOE decided to not cover remote condensers in the January 2009 final rule. DOE further stated that it would address later whether it has the authority to regulate this equipment, and if so, would examine then whether standards for remote condensers are warranted and feasible. 74 FR 1105 (Jan. 9, 2009).

DOE believes that nothing has changed to affect this stance. DOE continues to believe that the condenser rack to which a piece of remote condensing commercial refrigeration equipment is attached to, is a separate piece of equipment that may serve other equipment types (*e.g.,* walk-in coolers and freezers). As such, DOE is not

[23] A notation in the form ''Docket No. EE–2006–STD–0126, Zero Zone, Public Meeting Transcript, No. 3.4 at p. 48'' identifies an oral comment that DOE received during the May 16, 2006 Framework public meeting and which was recorded on page 48 of the public meeting transcript (document number 3.4) in the docket for the 2009 CRE energy conservation standards rulemaking (Docket No. EERE–2006–STD–0126).

[24] Joint Comment refers to a written comment submitted by the Alliance to Save Energy, ACEEE, the Appliance Standards Awareness Project, NRDC, Northeast Energy Efficiency Partnerships, and Northwest Power and Conservation Council in Docket No. EERE–2006–STD–0126.

considering remote condensing racks in the current associated energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003). DOE is not introducing test procedures for remote condensers in this rulemaking, and maintains that DOE has no obligation to do so. DOE, if it proposed to regulate or develop a test procedure for remote condensing racks, would do so in a separate rulemaking.

b. Testing of Part-Load Technologies at Variable Refrigeration Load

Technologies that operate as a function of variable ambient conditions can reduce annual energy consumption of commercial refrigeration equipment by adapting to changes in refrigeration load that result from changes in ambient conditions. These variable load, or part-load, technologies include higher efficiency expansion valves, condenser fan motor controllers, and anti-sweat heater controllers. In the November 2010 NOPR, DOE suggested that, although ASHRAE Standard 72–2005 is a steady-state test, some variation in refrigeration load is experienced in that test due to the door opening and night curtain provisions. This variation in refrigeration load inherent in the test procedure means the effects of variable load, or part-load, features are already captured to some degree in the proposed test procedure for commercial refrigeration equipment. DOE further argued that additional independent or explicit part-load testing would result in increased cost and burden for manufacturers of covered equipment. DOE estimated that part-load testing at additional rating conditions could more than double the cost and burden of testing for all commercial refrigeration equipment. In the November 2010 NOPR, DOE stated that explicit testing at multiple sets of conditions was not justified because of this increased burden, and proposed that the test procedure continue to reference only one standard ambient condition, relying on the transient effects inherent in the proposed test procedure to capture part-load performance. 75 FR 71601 (Nov. 24, 2010).

At the January 2011 NOPR public meeting and in subsequent written comments, NEEA and California Codes and Standards agreed with DOE that the ASHRAE Standard 72 test method does include variation in the refrigeration load, which would realize the benefits of part-load technologies, such as floating head pressure controls, liquid suction heat exchangers, and improved thermal expansion loads in equipment with doors. These interested parties asked DOE to evaluate part-load technologies in the energy conservation standards rulemaking. (NEEA, No. 8 at p. 2; California Codes and Standards, No. 19 at p. 13)

AHRI commented that additional, specific requirements for testing of part-load technologies will add an additional burden on manufacturers, and agreed with DOE that ASHRAE 72 already accounts to some degree for the effects of part-load technologies. As a result, AHRI recommended against new testing requirements for these technologies. (AHRI, No. 15 at p. 2) NEEA agreed that short-term part-load impacts are limited, and that longer-term variations, such as those induced by changes in ambient conditions, would be difficult to capture without imposing a significant additional burden. (NEEA, No. 8 at p. 2)

Conversely, NRDC commented that it believed that DOE had not provided sufficient data to show that testing at varying loads would impose an undue burden on manufacturers. NRDC further stated that manufacturers that use advanced control strategies and variable-load technologies need to have such features properly credited. According to NRDC, to not adequately credit such features would conflict with section 342 of EPCA, which requires DOE to adopt test procedures that reflect representative energy use. (NRDC, No. 14 at pp. 3–4)

ACEEE stated its belief that gains due to technologies such as adaptive controls and modulating components must be captured in a test procedure to fairly express to consumers the better value that may be presented by equipment that performs more efficiently in the field. In ACEEE's opinion, to not capture the effects of these features would result in a loss of competitiveness by domestic manufacturers. (ACEEE, No. 12 at p. 2) ACEEE added that it does not believe that the current test methods account for modulating components and their benefits. (ACEEE, No. 12 at p. 6)

DOE recognizes the desire to better characterize the performance of these devices. However, DOE believes that the refrigerant load changes inherent in the amended test procedure are representative of average use and that the test procedure established in this final rule meets the requirements for a test procedure established by EPCA section 342 (42 U.S.C. 6314(a)(2)). Given that, DOE believes the establishment of new, independent test requirements for part-load conditions is not necessary and would impose undue burden on manufacturers. As stated previously, testing of part-load technologies would more than double the burden on manufacturers to test equipment. DOE maintains that part-load technologies that respond to changes in refrigeration load will be partially captured in the DOE test procedure due to door openings, night-curtain deployment, compressor cycling, and minor fluctuations in the thermodynamic state of the case during the test. In any event, manufacturers may implement any part-load technologies as they see fit. DOE believes the efficiency gains achieved by part-load technologies in the current test procedure are sufficient, and that further independent testing is not justified.

2. Effective Date

EPCA requires that, 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) and 6314(a)(6)(D)) If DOE determines that the amended test procedure would alter the measured efficiency of a covered product, DOE must amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2) and 6314(a)(6)(D)) Several of the provisions in this test procedure final rule will change the measured energy use of some commercial refrigeration equipment covered under the scope of current standards. As such, DOE is in the process of amending the current energy conservation standards for commercial refrigeration equipment in a concurrent rulemaking (Docket No. EERE–2010–BT–STD–0003).

In the November 2010 NOPR, DOE proposed to require that the use of the amended test procedure be consistent with the compliance date of any revised energy conservation standards. 75 FR 71599 (Nov. 24, 2010). DOE is adding language to the final test procedure amendments clarifying that the amendments shall not be used at the time of publication to determine compliance with the current energy conservation standards. Instead, manufacturers will be required to use the amended test procedure to demonstrate compliance with DOE's energy conservation standards on the compliance date of any final rule establishing amended energy conservation standards for commercial refrigeration equipment. Until this date, manufacturers must continue to use the existing DOE test procedure, as set forth at 10 CFR 431.64, to demonstrate compliance with existing energy conservation standards.

However, EPCA also states that, effective 360 days after any amended

test procedure final rule is prescribed, any representations of the ''maximum daily energy consumption'' of covered equipment, for example in labeling or advertising, must be based on results generated using the amended test procedure. (42 U.S.C. 6314(d)) In the November 2010 NOPR, DOE proposed that, as of 360 days after publication of any test procedure final rule, representations of energy consumption of any covered equipment would need to be based on results generated using the amended test procedure. 75 FR 71599 (Nov. 24, 2010). This would result in possible dual testing requirements for some cases between the period 360 days after publication of the amended test procedure final rule and the effective date of any amended standards. However, because many of the test procedure amendments are optional, this is not expected to affect many units. For example, if a case is sold with and without occupancy sensors, the case would be tested in accordance with the current DOE test procedure, without amendments, to show compliance with DOE energy conservation standards. Because this case is not required to be tested with occupancy sensors in the amended test procedure, the test using the current DOE test procedure is also in accordance with the amended test procedure and the established daily energy consumption values may be reported and publicized. Representations of the ''maximum daily energy consumption'' of cases accounting for the energy savings of lighting occupancy sensors, for example, could be made only after testing the case in accordance with the lighting occupancy sensor provisions in the amended test procedure. However, the amended test procedure could not be used to show compliance with DOE energy conservation standards until the effective date of any amended energy conservation standards. This is also true for covered equipment sold with night curtains. The provision for testing cases at the lowest application product temperature will not affect the reported energy of any covered product because manufacturers of cases that cannot be tested at the prescribed rating temperature are currently advised to request a waiver, since these cases cannot be tested under the existing test procedure.

ACEEE, NEEA, and Earthjustice all expressed the view that the test procedure effective date should be equivalent to that of any amended energy conservation standards published in the concurrent energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003). (ACEEE, No. 12 at p. 3; NEEA, No. 31 at p. 2; Earthjustice, No. 11 at p. 2) Earthjustice also stated that DOE must clarify that manufacturers may not use night curtains and/or occupancy sensors to comply with minimum efficiency standards prior to the compliance date of amended standards that account for those features. (Earthjustice, No. 11 at p. 2) Earthjustice further commented that EPCA requires that, if DOE amends test procedures, it must also determine to what extent the proposed test procedure would alter measured energy use as determined under the existing test procedure. If the test procedure is found to alter measured energy use, DOE must amend the energy conservation standard to account for this, taking into consideration the performance of existing minimally compliant equipment under the amended test procedure. (Earthjustice, No. 11 at pp. 2–3)

DOE understands that, if the amended test procedure will affect the measured energy consumption of a covered piece of equipment, DOE must amend energy conservation standards accordingly. DOE is pursuing amended standards based on the test procedure amendments being adopted in this final rule. As such, DOE is requiring that the use of any amended test procedure not be required until the compliance date of any amended standards. As these amended test procedures will only be used with standards that have been set based on those amendments, DOE believes there is no risk of backsliding, but is conscious of and accounting for this issue in the associated energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003).

With respect to representations of the maximum daily energy consumption of covered equipment, it is DOE's understanding that 360 days following publication of the test procedure final rule, representations of energy consumption must be made using the amended test procedure. However, this could create a situation where manufacturers may have to test equipment using two different test procedures beginning 360 days after publication of the test procedure final rule (anticipated October 2012) and until 3 years after the publication of the CRE energy conservation standards final rule (anticipated January 2016). DOE believes this potentially would be confusing and burdensome for manufacturers. To simplify testing activities, DOE is specifying in this final rule that use of the amended test procedure for compliance and representations of energy use will be required on the compliance date of any amended energy conservation standards resulting from the ongoing rulemaking (Docket No. EERE–2010–BT–STD–0003). This stance is similar to that proposed for walk-in coolers and freezers with respect to the testing of insulation values and is the most practical to implement. 76 FR 48745 (Aug. 9, 2011). DOE is including a clarifying statement in the test procedure rule language regarding when the amended test procedure must be used for purposes of compliance and labeling or other representations of energy consumption.

3. Preemption

At the January 2011 NOPR public meeting, California Codes and Standards asked DOE to consider which features of commercial refrigeration equipment should be addressed by DOE, as opposed to others that could be left uncovered and regulated by State or local building efficiency standards and codes. Features that could be more appropriately covered by State or local building regulations, according to the comment, could include controls not integral to a single unit (centralized, storewide controls); liquid-suction heat exchangers serving an entire lineup of cases; and application-specific devices, such as night curtains, which could be very valuable in some applications but inapplicable in others (such as 24-hour stores). California Codes and Standards requested that DOE clarify which of these types of features would be ''covered'' or ''uncovered'' under the current and forthcoming CRE regulations (California Codes and Standards, No. 13 at pp. 15–16) and requested clarification on the ability of State or local building standards to specify additional prescriptive requirements for equipment based on building occupancy. (California Codes and Standards, No. 19 at p. 75)

Federal minimum efficiency standards for commercial refrigeration equipment supersede State or local efficiency standards (42 U.S.C. 6297, 6316(e)(2)), unless such standards are contained in a State or local building code for new construction that meets the requirements of 42 U.S.C. 6297(f)(3), including the requirement that one pathway for compliance under the State building code is through the use of appliances that meet Federal standards.

4. Burden of Testing

DOE understands that amending test procedures or including additional

provisions in those test procedures could increase the burden on manufacturers to quantify the performance of their equipment. EPCA requires that the test procedures promulgated by DOE be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs of the covered equipment during a representative average use cycle. EPCA also requires that the test procedure not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2))

DOE has analyzed the expected incremental cost of the test procedure amendments adopted in this final rule and its impact on manufacturers. The amendments to the DOE test procedure for commercial refrigeration equipment consist of updating the referenced industry test procedures to the most current versions; testing requirements for units sold with night curtains and lighting occupancy sensors or controls installed; and provisions for testing units at temperatures other than the specified rating temperatures of 38 °F, 0 °F, and −15 °F.

All commercial refrigeration equipment for which standards were set in EPACT 2005 are currently required to be tested using the DOE test procedure to show compliance with the EPACT 2005 standards. (42 U.S.C. 6313(c)(2)–(3); 10 CFR 431.66(b)) Manufacturers of equipment for which standards were set in the January 2009 final rule are similarly required to test units using the DOE test procedure to show compliance with the 2009 standards levels as of January 1, 2012. 74 FR 1093 (Jan. 9, 2009); 10 CFR 431.66(d)). The current DOE test procedure references AHRI Standard 1200–2006 and AHAM HRF–1–2004. This test procedure consists of one 24-hour test at standard rating conditions to determine daily energy consumption.

The updated versions of AHRI Standard 1200–2010 and AHAM HRF–1–2008 do not vary substantially from the previously referenced versions. Aligning the DOE test procedure with the most recent industry test procedures currently in use—AHRI standard 1200–2010 and AHAM HRF–1–2008—simplifies testing requirements and reduces the burden of testing for both small and large manufacturers.

For equipment that is sold with night curtains installed, the current test procedure requires one 24-hour test that does not account for the energy savings associated with night curtain deployment. The amended test procedure adopted in this final rule incorporates provisions to account for the energy savings associated with night curtain deployment. The night curtain test procedure requires the night curtain to be pulled down for 6 hours during the test. DOE believes the incremental burden of pulling down the night curtain at a certain time and retracting it 6 hours later requires less than half a minute each and is not significant relative to the burden of conducting the test. Thus, DOE has determined that the testing costs for CRE models with added night curtains are approximately the same as those for models without night curtains and concludes there are no significant incremental costs associated with testing models with night curtains.

For units sold with lighting occupancy sensors and scheduled controls installed, no additional testing or measurements will be required. Manufacturers will be permitted to use a calculation method to determine the energy savings due to lighting occupancy sensors and scheduled controls. DOE believes that these additional calculations will only require approximately 30 minutes of additional time. These calculations are straightforward and similar to the calculations for alternate component energy consumption, which are part of the existing test procedure. When compared to the burden associated with the physical testing segment of the procedure, the additional calculations required by the lighting occupancy sensor and scheduled control requirements will not significantly increase the total burden of the test. Thus, DOE believes that the additional calculations for lighting occupancy sensors and controls will not significantly increase the burden of test for manufacturers of covered equipment. Also, DOE notes that manufacturers may optionally incorporate the testing of lighting occupancy sensors and controls into the physical test. In this case, manufacturers would be required to turn off and turn on the lights once each during the 24-hour test. DOE believes these additional steps would involve negligible effort in comparison to the burden associated with conducting the complete test and, thus, the incremental increase in burden would be negligible.

For equipment that cannot be tested at the specified integrated average rating temperature for its respective equipment class, manufacturers are currently required to test the unit using AHRI Standard 1200 at the specified test temperature. Under the adopted revisions, these manufacturers will be allowed to test units that cannot meet the specified test temperature for their equipment class at the lowest application product temperature, with the only difference being the integrated average temperature. Because the same test will be performed for cases that cannot be tested at the prescribed rating temperature and must be tested at lowest application product temperature, as compared to cases that are tested at DOE's prescribed rating temperature, DOE believes that this method will not increase the burden of test for those manufacturers and is likely to lead to more representative energy consumption values. DOE notes that the AHRI Standard 1200–2010 test is often already performed by manufacturers for participation in voluntary programs, independent collection of energy consumption information, or other reasons.

In this test procedure final rule, DOE is also allowing manufacturers to test at the internal temperatures and/or ambient conditions required for NSF–7 testing. This could dramatically reduce the burden for manufacturers that produce equipment for food storage, as under the amended test procedure these two 24-hour tests can be combined. The NSF–7 test is similar in length and burden to the DOE test, but is performed at slightly different internal and external temperatures. Certification of equipment tested at NSF–7 test temperatures for the purposes of compliance with DOE energy conservation standards will only be possible for equipment that is able to meet the DOE energy conservation standard at the more stringent NSF–7 test conditions. However, DOE believes this provision can still potentially decrease the burden of test for some manufacturers.

The amendments to the test procedure for commercial refrigeration equipment were chosen to help minimize the impact of additional testing while updating the DOE test procedure to include the most current versions of industry standards, capture new energy efficiency technologies, and provide more accurate test methods for equipment that cannot be tested at the currently prescribed integrated average rating temperature. Because none of these amendments significantly increase the burden of a test, DOE believes that the test procedure finalized here will not be unduly burdensome to conduct.

For further discussion of the economic impact of additional testing on small CRE manufacturers, the entities that will be the most impacted by additional testing requirements, please see section IV.B of this final rule.

a. Determination of Basic Models in the Context of Night Curtain and Lighting Occupancy Sensor and Scheduled Control Test Provisions

In the November 2010 NOPR, DOE proposed that if a unit is tested and demonstrates compliance with the relevant energy conservation standard without night curtains or lighting occupancy sensors installed, that unit can also be sold with night curtains or lighting occupancy sensors installed without additional testing. DOE proposed this same provision for lighting occupancy sensors and controls in order to minimize the testing burden on manufacturers and because DOE believed that the addition of night curtains and lighting occupancy sensors and controls would only decrease energy consumption. If, however, a piece of equipment does not meet DOE's energy conservation standards without night curtains (or lighting controls) installed, DOE proposed to require the unit to be tested with night curtains (or lighting controls) installed. In this instance, assuming the energy conservation standard is met, the equipment would also be required to be sold with night curtains (or lighting controls) installed. 75 FR 71600 (Nov. 24, 2010). However, if a manufacturer wishes to publicize the certified ratings of a unit with night curtains (or lighting controls) installed, that energy consumption value must be determined using the DOE test procedure and applicable sampling plans. (42 U.S.C. 6314(d)) In addition, the energy consumption of this basic model must be certified. 76 FR 12422, 12453 (March 7, 2011).

Coca-Cola commented that a manufacturer could sell a case with a lighting controller installed without testing the case to prove the energy savings as long as it made no claims regarding energy savings. Coca-Cola further commented that performing the additional tests could be burdensome for the manufacturer and should remain optional. (Coca-Cola, No. 19 at p. 243) However, California Codes and Standards commented that the additional burden to calculate, or test, with and without occupancy sensors seemed minimal and that perhaps it should be required. (California Codes and Standards, No. 19 at p. 250) NRDC encouraged DOE to require manufacturers of open cases with night curtains to test them with the curtains deployed for 6 hours as proposed, and to require labeling of equipment accordingly to explain the relevant efficiency features to potential buyers. (NRDC, No. 14 at p. 2) Similarly, NEEA disagreed with DOE's proposal to allow night curtains to be used to establish compliance in units that are noncompliant without night curtains. (NEEA, No. 8 at p. 4)

Coca-Cola agreed with DOE's proposal to allow manufacturers the option of testing with night curtains. (Coca-Cola, No. 19 at p. 243) This provision would require that cases be tested with night curtains if (1) the case without night curtains does not meet the energy conservation standard; or (2) the manufacturer wishes to publicize the energy consumption of the case with night curtains installed. In response to California Codes and Standards and NRDC's comments regarding the requirement of units sold with night curtains to be tested with night curtains, DOE has adopted the provision to allow cases that meet DOE's energy conservation standard without night curtains to be sold with and without night curtains to minimize burden on manufacturers.

Furthermore, implementation of night curtains will only improve energy efficiency of the equipment. This is consistent with the provisions for grouping into basic model families established in the certification, compliance, and enforcement (CCE) final rule. (CCE final rule; 76 FR 12422, 12423 (March 7, 2011)). These provisions allow manufacturers to group individual models with essentially identical, but not exactly the same, energy performance characteristics into a basic model to reduce testing burden. Under DOE's certification requirements, all the individual models within a basic model identified in a certification report as being the same basic model must have the same certified efficiency rating and use the same test data underlying the certified rating. The CCE final rule also establishes that the efficiency rating of a basic model must be based on the least efficient or most energy consuming individual model, or, put another way, all individual models within a basic model must be at least as good as the certified rating. 76 FR 12428–29 (March 7, 2011). Because night curtains would only serve to decrease energy consumption or increase energy efficiency of commercial refrigeration equipment, DOE believes the provisions for optionally testing cases with night curtains if the case without night curtains meets the energy conservation standard for its equipment class ensures that all equipment sold meets DOE's energy conservation standards and minimizes burden on manufacturers. This same argument applies to the testing provisions for cases with lighting occupancy sensor and/or scheduled lighting controls installed. DOE notes that manufacturers are free to test a case both with and without night curtains (or lighting occupancy sensors and/or lighting controls) to establish separate efficiency ratings and must do so if they wish to make representations of both values.

Regarding NEEA's comment criticizing the fact that testing of cases with night curtains could be used to certify otherwise noncompliant equipment, DOE sets performance standards, but cannot control or restrict what design options or technologies a manufacturer chooses to employ to meet a certain standard level. Thus, like any other design option, manufacturers may employ night curtains as a means to increase efficiency of a case to meet DOE's energy conservation standards.

b. Estimates of Burden

In the initial regulatory flexibility analysis (IRFA), presented in the November 2010 NOPR, DOE quantified the incremental burden on small manufacturers and certified that this rulemaking, as proposed, would not have a significant impact on a substantial number of small entities. 75 FR 71596, 71606–08 (Nov. 24, 2010). In the IRFA, DOE presented several estimates of the cost of testing and the number of small U.S. commercial refrigeration equipment manufacturers. DOE estimated testing costs to be approximately $5,000 per unit to conduct the baseline test, as outlined in AHRI 1200–2010. 75 FR 71607 (Nov. 24, 2010). In response to these estimates, Southern Store Fixtures, Traulsen, and Hussmann all commented that the cost of testing is actually much greater than $5,000. (Southern Store Fixtures, No. 19 at p. 237; Traulsen, No. 19 at p. 238; Hussmann, No. 19 at p. 238) Traulsen stated that an estimate for total cost of testing a unit, including shipping, product costs, etc., would be $15,000. (Traulsen, No. 9 at p. 8) NEEA agreed with other interested parties that stated that DOE's estimate of $5,000 for testing a unit was likely too low. However, NEEA also stated that, based on its own experience, the cost of additional testing of a model is not nearly double the cost of the first test, since the unit is only shipped and set up once. Thus, according to NEEA, additional tests would only slightly add to the burden of testing. (NEEA, No. 8 at p. 7) NEEA stated that it did not believe DOE's proposal to be overly burdensome, as in every instance only one 24-hour test should be required for a given piece of equipment. (NEEA, No. 8 at p. 7)

Traulsen stated that it believes DOE's estimate of 22 small businesses in the

CRE manufacturing sector to be too low, and that it believes most or even all CRE manufacturers employ fewer than 750 employees if subsidiaries of larger companies are considered as independent business units. Traulsen submitted a list of 39 brands or manufacturers of commercial refrigeration equipment. (Traulsen, No. 9 at pp. 4–5)

Southern Store Fixtures commented that the proposed test procedure would impact its operation. (Southern Store Fixtures, No. 19 at p. 253) Traulsen stated that equipment sampling provisions and the increasing scope of standards are causing testing costs to increase significantly and, according to Traulsen, the company's marginal costs incurred as a result will be approximately $250,000 per year. (Traulsen, No. 9 at pp. 1–2) Zero Zone commented that applying additional tests is only easy if it is known that these tests must be performed when the unit is originally tested. Re-testing of units is much more burdensome than adding additional tests to a unit being tested, as re-testing requires that the test setup be re-installed and calibrated. Zero Zone also commented that, while the test procedure changes will not have a significant impact on a substantial number of small entities, the addition of DOE regulations to existing regulations will create a barrier to entry into the market for small start-up companies. (Zero Zone, No. 16 at pp. 1–2)

DOE has attempted to minimize the burden on manufacturers by keeping all test procedure amendments confined to the existing single 24-hour test. Thus, the test procedure amendments should not significantly increase the burden of testing a piece of equipment covered under the rule.

DOE appreciates the information related to cost of testing and the number of small businesses covered by this rule. DOE has considered these new numbers in revising the regulatory flexibility analysis. However, DOE notes that the costs cited by manufacturers represent the cost to conduct the AHRI 1200 test, which is required by both the existing test procedure and the new amended test procedure. Thus, the $15,000 test burden is not an incremental cost associated with this test procedure final rule. The incremental cost to test a piece of commercial refrigeration equipment covered under this rulemaking will not increase significantly because the amendments in this final rule do not significantly impact the time, labor, or materials required to conduct a test. Because the testing burden will not increase significantly as a result of this rule, DOE believes the incremental impact on small businesses will be small. DOE's revised final regulatory flexibility analysis can be found in section IV.

c. Coordination with ENERGY STAR

Traulsen expressed concern that increased requirements for third-party testing and compliance with DOE and U.S. Environmental Protection Agency (EPA) programs are escalating the burden on manufacturers. (Traulsen, No. 9 at pp. 1–2) Traulsen also commented that the most significant improvement DOE could make in terms of reducing burden for manufacturers would be to align DOE and ENERGY STAR testing and reporting requirements. (Traulsen, No. 5 at p. 254) Traulsen and True commented that ENERGY STAR is currently requiring equipment to be tested ''out of the box,'' including testing at the product temperature at which the unit is shipped. (Traulsen, No. 19 at p. 195; True, No. 19 at p. 198) Traulsen explained how this requirement has created issues because it ships its cases at an internal temperature set point of 34 °F for marketing reasons, which may create problems when the cases are tested at that temperature. Traulsen asked if DOE was also going to be requiring the testing of cases ''out of the box'' without adjusting the integrated average temperature set point. (Traulsen, No. 19 at p. 195) NEEA commented it had been involved with ENERGY STAR since its inception and that it is not possible to test units out of the box, and that ''out of the box'' simply means that the unit is not specially fabricated or adjusted. (NEEA, No. 19 at p. 198) Traulsen stated that DOE must ensure that the test procedure allows for adjustment of the equipment to the test set points, as ''out of the box'' set points may not be 38 °F. Traulsen further stated that this would differ from EPA testing, where units must be tested as is, out of the box. (Traulsen, No. 9 at p. 7)

DOE attempts, to the extent possible, to minimize duplicative reporting or testing requirements. Further, this final rule does not require ''out of the box'' testing as interpreted by Traulsen. All equipment tested for the purposes of compliance with DOE energy conservation standards must be tested using the DOE test procedure. DOE is working with EPA to ensure that the test procedures for commercial refrigeration equipment for the regulatory program and the ENERGY STAR program are the same.

5. Association With Compliance, Certification, and Enforcement Regulations

Interested parties inquired as to how the provision allowing equipment that complies with the energy conservation standard to be sold with and without night curtains (or lighting controls) without being retested relates to the concurrent CCE rulemaking. 76 FR 12422 (March 7, 2011). AHRI commented that there was a disconnect between what is being proposed in the CCE rulemaking and the provisions for testing night curtains and lighting control devices in the November 2010 NOPR. (AHRI, No. 19 at p. 254) AHRI also commented that because of issues related to compliance and claiming energy savings from night curtains without testing, manufacturers were going to be required to test cases twice. (AHRI, No. 19 at p. 216) NEEA added that utility programs and ENERGY STAR will require certified values for inclusion in their programs. (NEEA, No. 19 at p. 162) Coca-Cola inquired whether a unit that had been tested without night curtains had to be certified with night curtains under the current CCE requirements. (Coca-Cola, No. 19 at p. 161) Heatcraft inquired whether the provision for selling commercial refrigeration equipment with and without night curtains if the unit met DOE's energy conservation standards without night curtains installed could apply to other components, such as a unit that was sold with a permanent split capacitor or evaporative condensed screw condenser fan. (Heatcraft, No. 19 at p. 155)

In response to AHRI's comment that the proposal for testing and certifying units with night curtains may conflict with the CCE rulemaking (76 FR 12422 (March 7, 2011)), DOE notes that testing of equipment with or without night curtains is not required because there are currently no Federal prescriptive standards that include night curtains and no test procedure to quantify their effect on equipment energy consumption. DOE believes that the test procedure established in this final rule for units equipped with night curtains and/or lighting occupancy sensors and scheduled lighting controls does not conflict with the CCE requirements that DOE published in the CCE final rule. 76 FR 12423 (March 7, 2011). Specifically, as mentioned above, implementation of night curtains (or lighting occupancy sensors and/or controls) will only reduce the reported energy consumption of the equipment and is consistent with the basic model provisions, established

in the CCE final rule. 76 FR 12428–29 (March 7, 2011).

Thus, in this final rule DOE is adopting provisions that allow units equipped with night curtains and/or lighting occupancy sensors and controls to be tested. As described in the CCE final rule, DOE allows CRE manufacturers to group individual models into basic models for the purposes of testing and certification. 76 FR 12428–29 (March 7, 2011). A manufacturer may group individual models with and without night curtains into one basic model provided that the certified ratings of all individual models in the group are identical and representative of the least efficient individual model within the basic model (i.e., the most consumptive model without night curtains). Today's final rule also provides that if manufacturers wish to make representations regarding reduced energy consumption associated with any feature, such as night curtains, manufacturers must use multiple basic models to distinguish between those with and without night curtains and the certified ratings of energy consumption must be developed either through testing or calculations as permitted by this final rule.

Regarding Heatcraft's comment, manufacturers have some discretion regarding how to rate units with permanent split capacitor or evaporative condensed screw condenser fans. Manufacturers may group individual models, with different condenser fans or other features, into a single basic model to show compliance with DOE's energy conservation standards, provided all models identified in a certification report as being the same basic model must have the same certified efficiency rating, which is based on the least efficient model. 76 FR 12428–29 (March 7, 2011).

a. Test Tolerances

In comments received during the November 2010 NOPR public comment period, Traulsen stated that the proposal presented by DOE does not address tolerances, but that many components have tolerances of 10 to 15 percent, and that test laboratories recognize variations of 5 to 10 percent. Traulsen suggested a 20 percent tolerance on standards testing. (Traulsen, No. 9 at pp. 7–8) DOE's current test tolerances for commercial refrigeration equipment were established in the CCE final rule and are based on a specified sampling plan and statistical variances approximated with a Student's t-distribution. 76 FR 12430 (March 7, 2011). Amendment of these tolerances, sampling plans, or other items related specifically to CCE activities for commercial refrigeration equipment are not addressed in this test procedure final rule.

6. Alternative Refrigerants

At the January 2011 NOPR public meeting, DOE received several comments regarding alternative refrigerants. AHRI stated that there is proposed legislation (unspecified) that would require the phase down of hydrofluorocarbons, which would require the use of alternative refrigerants in commercial refrigeration equipment, and suggested that DOE assess the performance of different refrigerants. (AHRI, No. 19 at p. 22) California Codes and Standards commented that DOE should address the burden of testing the same piece of equipment when different refrigerants are used. (California Codes and Standards, No. 19 at pp. 16–17)

True commented that if the refrigerant in a case changes, the evaporator coil, the expansion valve, and several other components would also have to change, which would effectively change the entire system. (True, No. 19 at pp. 19–20) Coca-Cola also commented that different refrigerants are not used in the same case. Coca-Cola further stated that different refrigerants work better at different temperatures, which is one reason the cabinets are treated separately. (Coca-Cola, No. 19 at pp. 20–21)

DOE agrees with Traulsen and Coca-Cola that if a different refrigerant were used in a case, it would require a new case design. Thus, cases with different refrigerants should be treated as different basic models and will require separate tests regardless. The DOE test procedure finalized here is capable of testing units using any primary refrigerant that enters and leaves the case as a single phase. However, each unit employing a different refrigerant would be treated as an individual basic model because of the different design considerations and performance characteristics. DOE acknowledges AHRI's comment suggesting that there may be proposed legislation which would influence the availability of hydroflourocarbon refrigerants; however this legislation is not in place and DOE does not wish to speculate on the specific requirements or impacts of any such legislation.

7. Secondary Coolant Systems

In the January 2009 final rule, DOE determined secondary coolant systems to be outside the scope of that rulemaking because secondary coolant systems constitute a small market share and there is no industry test procedure that covers all secondary coolant systems in the market. 74 FR 1105 (Jan. 9, 2009). Neither of these factors has changed significantly since the January 2009 final rule and, thus, DOE will continue to exclude secondary coolant systems from this test procedure and the concurrent energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0003).

Nevertheless, several interested parties commented regarding secondary coolant systems at both the January 2011 NOPR public meeting and the April 2011 Preliminary Analysis public meeting. At the January 2011 NOPR public meeting, AHRI stated that secondary coolant systems are excluded from AHRI 1200, but that AHRI is in the process of developing a relevant standard that would be issued soon. (AHRI, No. 19 at p. 58) True commented that secondary coolant systems are very difficult to test and are not covered by ASHRAE Standard 72. True added that the ASHRAE Standard 72 committee is reviewing test methods for secondary coolant systems, but currently there is no definitive, repeatable test method. (True, No. 19 at pp. 17–18) True stated that the ASHRAE Standard 72 committee is also working to incorporate test methods for secondary coolant equipment, but so far has found the variability of results in the currently available test methods quite large. True added that a revised standard would probably not be ready for inclusion in the DOE test procedure. (True, No. 19 at pp. 58–59) Traulsen agreed that it does not believe that secondary coolant systems can be effectively tested and rated. (Traulsen, No. 9 at p. 6) California Codes and Standards agreed with DOE's proposed exclusion of secondary coolant systems from the test procedure because it believed that coverage of them by DOE at this time could result in a hastily developed regulation, which would also pre-empt States from regulating such systems themselves. In addition, California Codes and Standards stated that because there is no test method in place and thus no data, more data must be collected prior to developing any standard levels for this equipment. (California Codes and Standards, No. 13 at p. 4) NEEA agreed with DOE's plan to exclude secondary coolant equipment from this round of rulemaking, citing the fact that there is currently no industry test procedure for this equipment. Instead, NEEA encouraged DOE to plan to address this equipment in the next rulemaking, potentially by including a ''reserved''

section in this notice. (NEEA, No. 8 at p. 2)

ACEEE expressed concern about the lack of coverage of secondary coolant systems, stating that hydrochlorfluorocarbon phase-downs and other factors are increasing the attention paid to these sorts of systems. Not regulating these systems, in the opinion of ACEEE, will prevent customers from being able to fairly compare them with existing systems. However, ACEEE conceded that it is not clear how to make accommodations in the test procedure to cover such equipment. At a minimum, ACEEE agreed with NEEA that placeholders for the systems should be inserted into the rule. (ACEEE, No. 12 at p. 3) True similarly expressed that secondary loop systems, often with carbon dioxide (CO_2), are becoming more common, which offers an environmental emissions improvement but can result in decreased energy efficiency. (True, No. 19 at pp. 17–18)

California Codes and Standards stated that the State of California is considering incorporating secondary loop CO_2 systems as part of its building standards, and will be addressing both energy efficiency and greenhouse gas emissions. (California Codes and Standards, No. 19 at pp. 18–19) ACEEE stated that manufacturers would likely prefer that secondary coolant systems be covered by a DOE rule, as excluding them would allow States to publish their own standards. (ACEEE, No. 12 at p. 3)

At the April 2011 Preliminary Analysis public meeting, interested parties also commented regarding the lack of an industry-accepted test procedure for secondary coolant systems. True stated that existing test methods for secondary coolant systems work only for systems for which there is not a phase change and test methods for transcritical or slurry systems have yet to be developed or verified. (Docket No. EERE–2010–BT–STD–0003, True, No. 31 at p. 162–63) Southern Store Fixtures stated that AHRI has recently developed a test procedure for secondary coolant systems, but that it is only applicable to fully liquid systems and does not accommodate two-phase flow. (Docket No. EERE–2010–BT–STD–0003, Southern Store Fixtures, No. 31 at p. 165) AHRI added that its work with secondary coolant applications is linked to ASHRAE's work, and that it too would have to wait for ASHRAE to produce a method of test (Docket No. EERE–2010–BT–STD–0003, AHRI, No. 31 at pp. 165–66) Traulsen agreed with DOE that secondary coolant technologies have not matured to the point where regulatory oversight would be required or beneficial. (Docket No. EERE–2010–BT–STD–0003, Traulsen, No. 31 at p. 5)

DOE previously excluded secondary coolant systems in the January 2009 final rule, in part, because there were no established test procedures to evaluate their energy consumption. As AHRI mentioned, secondary coolant systems are still excluded from AHRI 1200–2010. In December 2011, AHRI published AHRI Standard 1320 (I–P)–2011, ''Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets for Use with Secondary Refrigerants.'' However, as interested parties noted, this new standard specifies a reference working fluid and is applicable only to the portion of secondary coolant systems that use secondary coolants with similar characteristics. Specifically, this standard will not be applicable to transcritical CO_2, brine, or ammonia secondary coolant systems. The ASHRAE Standard 72 committee is also considering a method of testing to evaluate secondary coolant systems, including transcritical CO_2 systems; however, this standard was not available in time for this rulemaking.

DOE agrees with many of the interested parties that testing secondary coolant systems accurately will be difficult and an accepted and vetted method to do so does not yet exist. Given this uncertainty and the small market share of this equipment, DOE believes it best to continue to exclude secondary coolant systems from the DOE test procedure; however, DOE will continue to consult with ASHRAE and AHRI regarding the development of a future test procedure for secondary coolant systems. In the next DOE test procedure revision, DOE will reassess the status and accuracy of industry test procedures for secondary coolant systems and, if available, could include the test procedures in the DOE test procedure at that time. Since it is not clear when a reliable and vetted test procedure for transcritical secondary coolant systems will be available, DOE does not wish to reserve a section in this test procedure final rule.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

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

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an IRFA whenever an agency is required to publish a general notice of proposed rulemaking. When an agency promulgates a final rule after being required to publish a general notice of proposed rulemaking, the agency must prepare a final regulatory flexibility analysis (FRFA). The requirement to prepare these analyses does not apply to any proposed or final rule if the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. If the agency makes such a certification, the agency must publish the certification in the **Federal Register** along with the factual basis for such certification.

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, so that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990 (Feb. 12, 2003). DOE has made its procedures and policies available on the Office of the General Counsel's Web site at *www.gc.doe.gov*.

In the November 2010 NOPR, DOE reviewed the proposed rule to amend the test procedure for commercial refrigeration equipment, under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE certified that the proposed rule, if adopted, would not result in a significant impact on a substantial number of small entities. DOE received comments on its certification and the economic impacts of the test procedure, and has responded to these comments in section III.B.4. After consideration of these comments, DOE certifies that the test procedure amendments set forth in this final rule will not have a significant impact on a substantial number of small entities. The factual basis for this certification is set forth below.

For the CRE manufacturing industry, the Small Business Administration (SBA) has set a size threshold, which defines those entities classified as ''small businesses'' for the purpose of the statute. DOE used the SBA's size standards to determine whether any small entities would be required to

comply with the rule. 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 *www.sba.gov/sites/default/files/Size_Standards_Table.pdf.* CRE manufacturers are classified under NAICS 333415, ''Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing.'' The SBA sets a threshold of 750 employees or less for an entity to be considered as a small business for this category.

DOE conducted a focused inquiry into small business manufacturers of equipment covered by this rulemaking. During its market survey, DOE used all available public information to identify potential small manufacturers. DOE's research involved the review of industry trade association membership directories (including AHRI), equipment databases (*e.g.,* Federal Trade Commission (FTC), the Thomas Register, California Energy Commission (CEC), and ENERGY STAR databases), individual company Web sites, and marketing research tools (*e.g.,* Dunn and Bradstreet reports, Manta) to create a list of companies that manufacture or sell commercial refrigeration equipment covered by this rulemaking. DOE also referred to a list of small businesses that manufacture commercial refrigeration equipment, supplied by Traulsen in a written comment. (Traulsen, No. 9 at pp. 4–5) Using these sources, DOE identified 61 manufacturers of commercial refrigeration equipment.

DOE then reviewed this data to determine whether the entities met the SBA's definition of a small business manufacturer of commercial refrigeration equipment and screened out companies that do not offer equipment covered by this rulemaking, do not meet the definition of a ''small business,'' or are foreign owned and operated. Based on this review, DOE has identified 26 companies that would be considered small manufacturers. DOE had originally identified 22 manufacturers of commercial refrigeration equipment. 75 FR 71596, 71606–07 (Nov. 24, 2010). DOE referred to the list supplied by Traulsen to revise its estimate of the number of small entities considered in this rule. (Traulsen, No. 9 at pp. 4–5)

Table IV.1 stratifies the small businesses according to their number of employees. The smallest company has 6 employees and the largest company has 400 employees. The majority of the small businesses affected by this rulemaking (85 percent) have fewer than 200 employees. Annual revenues associated with these small manufacturers were estimated at $569.3 million ($21.9 million average annual sales per small manufacturer). According to DOE's analysis, small entities comprise 43 percent of the entire commercial refrigeration equipment manufacturing industry.

TABLE IV.1—SMALL BUSINESS SIZE BY NUMBER OF EMPLOYEES

Number of employees	Number of small businesses	Percentage of small businesses	Cumulative percentage
1–10	4	15.4	15.4
11–20	3	11.5	26.9
21–30	2	7.7	34.6
31–40	1	3.8	38.5
41–50	2	7.7	46.2
51–60	1	3.8	50.0
61–70	1	3.8	53.8
71–80	2	7.7	61.5
81–90	0	0.0	61.5
91–100	1	3.8	65.4
101–110	1	3.8	69.2
111–120	0	0.0	69.2
121–130	2	7.7	76.9
131–140	0	0.0	76.9
141–150	0	0.0	76.9
151–200	2	7.7	84.6
201–300	3	11.5	96.2
301–400	1	3.8	100.0
401–750	0	0.0	100.0
Total	26	.....	.....

All commercial refrigeration equipment for which standards were set in EPACT 2005 are currently required to be tested using the DOE test procedure to show compliance with the EPACT 2005 standard levels. Manufacturers of equipment for which standards were set in the January 2009 final rule will similarly be required to test units using the DOE test procedure to show compliance with the 2009 standards levels beginning January 1, 2012. The current DOE test procedure references AHRI Standard 1200–2006 and AHAM HRF–1–2004. This test procedure consists of one 24-hour test at standard rating conditions to determine daily energy consumption.

In the November 2010 NOPR, DOE estimated the cost of conducting the DOE test procedure as $5,000 per 24-hour test. 75 FR 71607 (Nov. 24, 2010). DOE received comments from interested parties presenting cost estimates of $15,000 per test. (Southern Store Fixtures, No. 19 at p. 237; Hussmann, No. 19 at p. 238; Traulsen, No. 9 at p. 8; NEEA, No. 8 at p. 7) DOE revised its analysis using a cost of $15,000 per 24-hour test, as suggested by interested parties. DOE notes that $15,000 represents the cost of conducting the current DOE test procedure, not the incremental cost associated with the amendments in this final rule.

In this final rule, DOE is adopting amendments that align the DOE test procedure with the most recent industry test procedures currently in use (AHRI Standard 1200–2010 and AHAM HRF–1–2008); incorporate provisions for testing certain energy efficiency features, including night curtains and lighting occupancy sensor and

scheduled controls; and provide a test procedure for specialty equipment that cannot be tested at the prescribed rating temperature. The updated standards referenced in this test procedure final rule, namely AHRI Standard 1200–2010 and AHAM HRF–1–2008, are not substantially different from those referenced in the current DOE test procedure. DOE estimates that the amended test procedure will still require 24 hours to conduct and cost approximately $15,000 per test.

For cases with night curtains installed, manufacturers can now take advantage of the reduced energy consumption associated with night curtains in the DOE test procedure. The night curtain provisions in the test procedure require the night curtain to be pulled down for 6 hours during the test. DOE believes the incremental burden of pulling down the night curtain at a certain time and retracting it 6 hours later requires less than half a minute each and is not significant relative to the burden of conducting the test. Although there is a small labor requirement associated with pulling down night curtains, DOE believes this is not an incremental burden because conducting the test already requires personnel to be present to check temperature probes and monitor the status of the test. Thus, DOE has determined that the testing costs for CRE models with added night curtains are approximately the same as those for models without night curtains and therefore concludes there are no significant incremental costs associated with testing models with night curtains.

The amendments in this final rule allowing calculations to quantify the energy savings associated with lighting occupancy sensors and controls will not lead to significant additional testing burden. DOE estimates the minimal costs associated with conducting the necessary calculations as $26.67 per test. DOE bases its estimate on the assumption that it would take an engineer 30 minutes to perform the calculation. The average hourly salary for an engineer completing this task is estimated at $38.74.[25] Fringe benefits are estimated at 30 percent of total compensation, which brings the hourly costs to employers to $55.34.[26] As this incremental cost represents 0.4 percent of the total testing cost for a unit, DOE believes this increase is not significant.

For equipment that cannot be tested at the prescribed integrated average product temperature, manufacturers currently are required to test the unit using AHRI Standard 1200 at the integrated average temperature associated with their respective equipment class. Under the revisions adopted in this final rule, these manufacturers will be allowed to test units that cannot meet the prescribed rating temperature at the lowest application product temperature, with the only difference being the integrated average product temperature. Since the same test is performed in both cases, DOE believes that this amendment to the test procedure will not increase the burden of test for those manufacturers. In addition, the provision for testing units that cannot operate at the specified integrated average product temperature will affect only a small percentage of units. DOE believes there would not be an incremental increase in testing burden, for small or large manufacturers, due to this provision.

DOE also notes that, if a unit is tested and shows compliance with the relevant energy conservation standard without night curtains or lighting occupancy sensors and scheduled controls installed, that unit can also be sold with these efficiency features installed without additional testing. DOE believes this provision will reduce burden on manufacturers.

Because there is not a significant incremental burden associated with any of the individual amendments adopted in this final rule, DOE concludes that there is not a significant incremental burden associated with the test procedure amendments in this final rule. In fact, the burden of conducting the amended test procedure is almost identical to the burden of conducting the existing DOE test procedure. Since there is no incremental burden associated with the amended test procedure, DOE has determined that this test procedure final rule does not impose negative economic impacts on manufacturers, including small entities. Thus, DOE continues to certify that this rule will not have a ''significant economic impact on a substantial number of small entities,'' and the preparation of a regulatory flexibility analysis is not warranted. DOE has transmitted the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of commercial refrigeration equipment must certify to DOE that their equipment complies with any applicable energy conservation standards. In certifying compliance, manufacturers must test their equipment according to the DOE test procedure for commercial refrigeration equipment, including any amendments adopted for the test procedure. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including commercial refrigeration equipment. 76 FR 12422 (March 7, 2011). 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 20 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

In this final rule, DOE amends its test procedure for commercial refrigeration equipment. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this rule amends an existing rule 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, neither an environmental assessment nor an environmental impact statement is required.

[25] U.S. Department of Labor, Bureau of Labor Statistics. 2009. *National Occupational Employment and Wage Estimates.* Washington, DC.

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

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (Aug. 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 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 equipment that is the subject of this final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a),(b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at *www.gc.doe.gov.* DOE examined this final rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

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

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

I. Review Under Executive Order 12630

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

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

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

K. Review Under Executive Order 13211

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

Today's regulatory action is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as

a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

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

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; FEAA) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the NOPR 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 FTC concerning the impact of the commercial or industry standards on competition.

The proposed rule incorporates testing methods contained in the following commercial standards: (1) AHAM HRF–1–2008, which supersedes ANSI/AHAM HRF–1–2004, ''Energy and Internal Volume of Refrigerating Appliances,'' including errata issued November 17, 2009, section 3.30, ''Volume,'' and sections 4.1 through 4.3, ''Method for Computing Refrigerated Volume of Refrigerators, Refrigerator-Freezers, Wine Chillers and Freezers,'' in 10 CFR 431.64(b)(3) and 431.66(a)(1); and (2) AHRI Standard 1200–2010, which supersedes ARI Standard 1200–2006, ''Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,'' section 3, ''Definitions,'' section 4, ''Test Requirements,'' and section 7, ''Symbols and Subscripts,'' in 10 CFR 431.64(b)(1), (b)(2), (b)(4)(i), and (b)(4)(ii), and 431.66(a)(3), (d)(2) and (3). As stated in the November 2010 NOPR, DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 323(b) of the Federal Energy Administration Act (*i.e.,* determine that they were developed in a manner that fully provides for public participation, comment, and review). 75 FR 71596, 71609 (Nov. 24, 2010). DOE has consulted with both the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in these standards and has received no comments objecting to their use.

M. Congressional Notification

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

V. Approval of the Office of the Secretary

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

List of Subjects in 10 CFR Part 431

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

Issued in Washington, DC, on January 31, 2012.

Kathleen B. Hogan,

Deputy Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE amends part 431 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

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

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

Authority: 42 U.S.C. 6291–6317.

■ 2. Section 431.62 is amended by adding in alphabetical order the definitions of ''lighting occupancy sensor,'' ''lowest application product temperature,'' ''night curtain,'' and ''scheduled lighting control'' to read as follows:

§ 431.62 Definitions concerning commercial refrigerators, freezers, and refrigerator-freezers.

* * * * *

Lighting occupancy sensor means a device which uses passive infrared, ultrasonic, or other motion-sensing technology to automatically turn off or dim lights within the equipment when no motion is detected in the sensor's coverage area for a certain preset period of time.

Lowest application product temperature means the integrated average temperature closest to the specified rating temperature for a given piece of equipment achievable and repeatable, such that the integrated average temperature of a given unit is within ±2 °F of the average of all integrated average temperature values for that basic model.

Night curtain means a device which is temporarily deployed to decrease air exchange and heat transfer between the refrigerated case and the surrounding environment.

* * * * *

Scheduled lighting control means a device which automatically shuts off or dims the lighting in a display case at scheduled times throughout the day.

* * * * *

■ 3. Section 431.63 is amended by adding paragraph (b)(2) and revising paragraph (c) to read as follows:

§ 431.63 Materials incorporated by reference.

* * * * *

(b) * * *

(2) AHAM HRF–1–2008 (''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, IBR approved for § 431.64.

(c) AHRI. Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Blvd., Suite 500, Arlington, VA 22201, (703) 524–8800, *ahri@ahrinet.org,* or *http://www.ahrinet.org/Content/StandardsProgram_20.aspx*.

(1) ARI Standard 1200–2006, *Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,* 2006, IBR approved for §§ 431.64 and 431.66.

(2) AHRI Standard 1200 (I–P)–2010 (''AHRI Standard 1200 (I–P)–2010''), *2010 Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,* 2010, IBR approved for § 431.64.

■ 4. Section 431.64 is amended by revising paragraph (b) to read as follows:

§ 431.64 Uniform test method for the measurement of energy consumption of commercial refrigerators, freezers, and refrigerator-freezers.

* * * * *

(b) *Testing and calculations.* Manufacturers shall use this paragraph (b) for the purposes of certifying compliance with the applicable energy conservation standards and for all representations of energy efficiency/energy use. For equipment manufactured prior to January 1, 2016, determine the daily energy consumption of each covered commercial refrigerator, freezer, or refrigerator-freezer by conducting the test procedure set forth in the Air-Conditioning and Refrigeration Institute (ARI) Standard 1200–2006, ''Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets,'' section 3, ''Definitions,'' section 4, ''Test

Requirements,'' and section 7, ''Symbols and Subscripts'' (incorporated by reference, see § 431.63). For each commercial refrigerator, freezer, or refrigerator-freezer with a self-contained condensing unit, also use ARI Standard 1200–2006, section 6, ''Rating Requirements for Self-contained Commercial Refrigerated Display Merchandisers and Storage Cabinets.'' For each commercial refrigerator, freezer, or refrigerator-freezer with a remote condensing unit, also use ARI Standard 1200–2006, section 5, ''Rating Requirements for Remote Commercial Refrigerated Display Merchandisers and Storage Cabinets.'' For equipment manufactured on or after January 1, 2016, determine the daily energy consumption of each covered commercial refrigerator, freezer, refrigerator-freezer or ice-cream freezer by conducting the test procedure set forth in the AHRI Standard 1200 (I–P)–2010, section 3, ''Definitions,'' section 4, ''Test Requirements,'' and section 7, ''Symbols and Subscripts'' (incorporated by reference, see § 431.63). For each commercial refrigerator, freezer, or refrigerator-freezer with a self-contained condensing unit, also use AHRI Standard 1200 (I–P)–2010, section 6, ''Rating Requirements for Self-contained Commercial Refrigerated Display Merchandisers and Storage Cabinets.'' For each commercial refrigerator, freezer, or refrigerator-freezer with a remote condensing unit, also use AHRI Standard 1200 (I–P)–2010, section 5, ''Rating Requirements for Remote Commercial Refrigerated Display Merchandisers and Storage Cabinets.''

(1) For display cases manufactured after January 1, 2016 and sold with night curtains installed, the night curtain shall be employed for 6 hours; 3 hours after the start of the first defrost period. Upon the completion of the 6-hour period, the night curtain shall be raised until the completion of the 24-hour test period.

(2) For commercial refrigerators, freezers, and refrigerator-freezers manufactured after January 1, 2016 and sold with lighting occupancy sensors, scheduled lighting controls, or lighting occupancy sensors and scheduled lighting controls installed on the unit, the effect on daily energy consumption will be determined by either a physical test or a calculation method and using the variables that are defined as:

CEC_A is the Alternate Compressor Energy Consumption (kilowatt-hours);

LEC_{sc} is the lighting energy consumption of internal case lights with lighting occupancy sensors and controls deployed (kilowatt-hours);

P_{li} is the rated power of lights when they are fully on (watts);

$P_{li(off)}$ is the power of lights when they are off (watts);

$P_{li(dim)}$ is the power of lights when they are dimmed (watts);

$TDEC_o$ is the total daily energy consumption with lights fully on, as measured by AHRI Standard 1200 (I–P)–2010 (kilowatt-hours);

t_{dim} is the time period which the lights are dimmed due to the use of lighting occupancy sensors or scheduled lighting controls (hours);

$t_{dim,controls}$ is the time case lighting is dimmed due to the use of lighting controls (hours);

$t_{dim,sensors}$ is the time case lighting is dimmed due to the use of lighting occupancy sensors (hours);

t_l is the time period when lights would be on without lighting occupancy sensors and/or scheduled lighting controls (24 hours);

t_{off} is the time period which the lights are off due to the use of lighting occupancy sensors and/or scheduled lighting controls (hours);

$t_{off,controls}$ is the time case lighting is off due to the use of scheduled lighting controls (hours);

$t_{off,sensors}$ is the time case lighting is off due to the use of lighting occupancy sensors (hours); and

t_{sc} is the time period when lighting is fully on with lighting occupancy sensors and scheduled lighting controls enabled (hours).

(i) For both a physical test and a calculation method, determine the estimated time off or dimmed, t_{off} or t_{dim}, as the sum of contributions from lighting occupancy sensors and scheduled lighting controls which dim or turn off lighting, respectively, as shown in the following equation:

$$t_{off} = t_{off,sensors} + t_{off,controls}$$

$$t_{dim} = t_{dim,sensors} + t_{dim,controls}$$

The sum of t_{sc}, t_{off}, and t_{dim} should equal 24 hours and the total time period during which the lights are off or dimmed shall not exceed 10.8 hours. For cases with scheduled lighting controls, the time the case lighting is off and/or dimmed due to scheduled lighting controls ($t_{off,controls}$ and/or $t_{dim,controls}$, as applicable) shall not exceed 8 hours. For cases with lighting occupancy sensors installed, the time the case lighting is off and/or dimmed due to lighting occupancy sensors ($t_{off,sensors}$ and/or $t_{dim,sensors}$, as applicable) shall not exceed 10.8 hours. For cases with lighting occupancy sensors and scheduled lighting controls installed, the time the case lighting is off and/or dimmed due to lighting occupancy sensors ($t_{off,sensors}$ and/or $t_{dim,sensors}$, as applicable) shall not exceed 2.8 hours and the time the case lighting is off and/or dimmed due to scheduled lighting controls ($t_{off,controls}$ and/or $t_{dim,controls}$, as applicable) shall not exceed 8 hours.

(ii) If using a physical test to determine the daily energy consumption of a commercial refrigerator, freezer, or refrigerator-freezer sold with lighting occupancy sensors, scheduled lighting controls, or lighting occupancy sensors and scheduled lighting controls installed on the unit, turn off the lights for a time period equivalent to t_{off} and dim the lights for a time period equal to t_{dim}. If night curtains are also being tested on the case, the period of lights off and/or dimmed shall begin at the same time that the night curtain is being deployed and shall continue consecutively, in that order, for the appropriate number of hours.

(iii) If using a calculation method to determine the daily energy consumption of a commercial refrigerator, freezer, or refrigerator-freezer sold with lighting occupancy sensors, scheduled lighting controls, or lighting occupancy sensors and scheduled lighting controls installed on the unit—

(A) Calculate the LEC_{sc} using the following equation:

$$LEC_{sc} = \frac{\left((P_{li} \times t_{sc}) + \left(P_{li(off)} \times t_{off}\right) + \left(P_{li(dim)} \times t_{dim}\right)\right)}{(1000)}$$

(B) Calculate the CEC_A using the following equation:

$$CEC_A = 0.75 \times \frac{3.4121 \times \left(LEC_{sc} - P_{li} \times {}^{t_l}/_{1000}\right)}{EER}$$

Where EER represents the energy efficiency ratio from Table 1 in AHRI Standard 1200 (I–P)-2010 (incorporated by reference, see § 431.63) for remote condensing equipment or the values shown in the following table for self-contained equipment:

EER FOR SELF-CONTAINED COMMERCIAL REFRIGERATED DISPLAY MERCHANDISERS AND STORAGE CABINETS

Operating temperature class	EER *Btu/W*
Medium	11
Low	7
Ice Cream	5

(C) For remote condensing commercial refrigerators, freezers, and refrigerator-freezers with lighting occupancy sensors, scheduled lighting controls, or lighting occupancy sensors and scheduled lighting controls installed, the revised compressor energy consumption (CEC_R) shall be the CEC_A added to the compressor energy consumption (CEC) measured in AHRI Standard 1200 (I–P)-2010 (incorporated by reference, see § 431.63). The CDEC for the entire case shall be the sum of the CEC_R and LEC_{sc} (as calculated above) and the fan energy consumption (FEC), anti-condensate energy consumption (AEC), defrost energy consumption (DEC), and condensate evaporator pan energy consumption (PEC) (as measured in AHRI Standard 1200 (I–P)-2010).

(D) For self-contained commercial refrigerators, freezers, and refrigerator-freezers with lighting occupancy sensors, scheduled lighting controls, or lighting occupancy sensors and scheduled lighting controls installed, the TDEC for the entire case shall be the sum of total daily energy consumption as measured by the AHRI Standard 1200 (I–P)-2010 (incorporated by reference, see § 431.63) test with the lights fully on ($TDEC_o$) and CEC_A, less the decrease in lighting energy use due to lighting occupancy sensors and scheduled lighting controls, as shown in following equation.

$$TDEC = TDEC_o + CEC_A - \left({}^{[(P]_{li} \times t_l)}/_{1000} - LEC_{sc}\right)$$

(3) Conduct the testing required in paragraphs (b) introductory text, (b)(1), and (2) of this section, and determine the daily energy consumption, at the applicable integrated average temperature in the following table. The integrated average temperature is determined using the required test method.

Category	Test procedure prior to January 1, 2016	Test procedure on or after January 1, 2016	Integrated average temperatures
(i) Refrigerator with Solid Door(s)	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	38 °F (±2 °F).
(ii) Refrigerator with Transparent Door(s)	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	38 °F (±2 °F).
(iii) Freezer with Solid Door(s)	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	0 °F (±2 °F).
(iv) Freezer with Transparent Door(s)	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	0 °F (±2 °F).
(v) Refrigerator-Freezer with Solid Door(s)	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	38 °F (±2 °F) for refrigerator compartment. 0 °F (±2 °F) for freezer compartment.
(vi) Commercial Refrigerator with a Self-Contained Condensing Unit Designed for Pull-Down Temperature Applications and Transparent Doors.	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	38 °F (±2 °F).
(vii) Ice-Cream Freezer	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	−15.0 °F (±2 °F).
(viii) Commercial Refrigerator, Freezer, and Refrigerator-Freezer with a Self-Contained Condensing Unit and without Doors.	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	(A) 0 °F (±2 °F) for low temperature applications. (B) 38.0 °F (±2 °F) for medium temperature applications.
(ix) Commercial Refrigerator, Freezer, and Refrigerator-Freezer with a Remote Condensing Unit.	ARI Standard 1200–2006.	AHRI Standard 1200 (I–P)–2010	(A) 0 °F (±2 °F) for low temperature applications. (B) 38.0 °F (±2 °F) for medium temperature applications.

(A) If a piece of commercial refrigeration equipment is not able to be tested at the specified integrated average temperatures of 38 °F (±2 °F), 0 °F (±2 °F), or −15 °F (±2 °F) for refrigerators, freezers, and ice-cream freezers, respectively, the unit may be tested at the lowest application product temperature, as defined in § 431.62. For many pieces of equipment, this will be the lowest thermostat setting. For remote condensing equipment without a thermostat or other means of controlling temperature at the case, the lowest application product temperature shall be that achieved with the adjusted dew point temperature (as defined in AHRI 1200 (I–P)–2010) set to 5 degrees colder than that required to maintain the manufacturer's lowest specified application temperature.

(B) For commercial refrigeration equipment that is also tested in accordance with NSF test procedures

(Type I and Type II), integrated average temperatures and ambient conditions used for NSF testing may be used in place of DOE prescribed integrated average temperatures and ambient conditions provided they result in a more stringent test. That is, the measured daily energy consumption of the same unit, when tested at the rating temperatures and/or ambient conditions specified in the DOE test procedure, will be lower than or equal to the measured daily energy consumption of the unit when tested with the rating temperatures or ambient conditions used for NSF testing. The integrated average temperature measured during the test may be lower than the range specified by the DOE rating temperature specifications, provided in paragraph (b)(3) of this section, but may not exceed the upper value of the specified range. Ambient temperatures and/or humidity values may be higher than those specified in the DOE test procedure.

(4) For equipment manufactured prior to January 1, 2016, determine the volume of each covered commercial refrigerator, freezer, or refrigerator-freezer using the methodology set forth in the ANSI/AHAM HRF–1–2004, ''Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers'' (incorporated by reference, see § 431.63), section 3.21, ''Volume,'' sections 4.1 through 4.3, ''Method for Computing Total Refrigerated Volume and Total Shelf Area of Household Refrigerators and Household Wine Chillers,'' and sections 5.1 through 5.3, ''Method for Computing Total Refrigerated Volume and Total Shelf Area of Household Freezers.'' For equipment manufactured on or after January 1, 2016, determine the volume of any covered commercial refrigerator, freezer, refrigerator-freezer, or ice-cream freezer using the method set forth in the HRF–1–2008 (incorporated by reference, see § 431.63), section 3.30, ''Volume,'' and sections 4.1 through 4.3, ''Method for Computing Refrigerated Volume of Refrigerators, Refrigerator-Freezers, Wine Chillers and Freezers.''

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