# Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

## DEPARTMENT OF ENERGY

## 10 CFR Part 431

**[EERE–2017–BT–TP–0008]**

**RIN 1904–AD83**

## Energy Conservation Program: Test Procedures for Commercial Equipment; Early Assessment Review: Commercial Refrigerators, Refrigerator-Freezers, and Freezers

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

**ACTION:** Request for information.

**SUMMARY:** The U.S. Department of Energy (''DOE'') is undertaking an early assessment review to determine whether amendments are warranted for the test procedure for commercial refrigerators, refrigerator-freezers, and freezers (''CRE''). DOE has identified certain issues associated with the currently applicable test procedure on which DOE is interested in receiving comment. The issues identified in this document concern scope and definitions, industry test standards, test conditions for specific CRE categories, test procedure clarifications and modifications, alternative refrigerants, certification of volumes, and test procedure waivers. DOE welcomes written comments from the public on any subject within the scope of this document, including topics not raised in this request for information (''RFI'').

**DATES:** Written comments and information are requested and will be accepted on or before July 26, 2021.

**ADDRESSES:** Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *https://www.regulations.gov.* Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE–2017–BT–TP–0008 and/or RIN 1904–AD83, by any of the following methods:

1. *Federal eRulemaking Portal: httsp://www.regulations.gov.* Follow the instructions for submitting comments.

2. *Email:* To *CRE2017TP0008@ee.doe.gov.* Include docket number EERE–2017–BT–TP–0008 and/or RIN 1904–AD83 in the subject line of the message.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document (Submission of Comments).

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

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

The docket web page can be found at: *https://www.regulations.gov/docket/EERE-2017-BT-TP-0008.* The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section III of this document for information on how to submit comments through *https://www.regulations.gov.*

**FOR FURTHER INFORMATION CONTACT:** Dr. Stephanie Johnson, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 287–1943. Email: *ApplianceStandardsQuestions@ee.doe.gov.*

Peter Cochran, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–9496. Email: *Peter.Cochran@Hq.Doe.Gov.*

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

**SUPPLEMENTARY INFORMATION:**

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### I. Introduction

DOE established an early assessment review process to conduct a more focused analysis that would allow DOE to determine, based on statutory criteria, whether an amended test procedure is warranted. 10 CFR part 430 subpart C appendix A section 8(a). This RFI requests information and data regarding whether an amended test would more accurately and fully comply with the requirement that the test procedure produce results that measure energy use during a representative average use cycle for the equipment, and not be unduly burdensome to conduct. To inform interested parties and to facilitate this process, DOE has identified several issues associated with the currently applicable test procedures on which DOE is interested in receiving comment. Based on the information

received in response to the RFI and DOE's own analysis, DOE will determine whether to proceed with a rulemaking for an amended test procedure.

If DOE makes an initial determination that an amended test procedure would more accurately or fully comply with statutory requirements, or DOE's analysis is inconclusive, DOE would undertake a rulemaking to issue an amended test procedure. If DOE makes an initial determination based upon available evidence that an amended test procedure would not meet the applicable statutory criteria, DOE would engage in notice and comment rulemaking before issuing a final determination that an amended test procedure is not warranted.

*A. Authority*

The Energy Policy and Conservation Act, as amended (''EPCA''),[1] among other things, authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part C[2] of EPCA, added by Public Law 95–619, Title IV, section 441(a) (42 U.S.C. 6311–6317 as codified), established the Energy Conservation Program for Certain Industrial Equipment, which sets forth a variety of provisions designed to improve energy efficiency. This equipment includes CRE, the subject of this document. (42 U.S.C. 6311(1)(E))

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

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6316(a) and 42 U.S.C. 6316(b); 42 U.S.C. 6297) DOE may, however, grant waivers of Federal preemption in limited instances for particular State laws or regulations, in accordance with the procedures and other provisions set forth under 42 U.S.C. 6316(a) and (e) (applying the preemption waiver provisions of 42 U.S.C. 6297)).

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including CRE, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6314(a)(1)) DOE is publishing this RFI to collect data and information to inform its decision to satisfy the 7-year-lookback review requirement.

*B. Rulemaking History*

The current DOE test procedure for CRE is codified in the Code of Federal Regulations (''CFR'') at 10 CFR part 431, subpart C, appendix B (''Appendix B''). DOE last updated the test procedure in a final rule published on April 24, 2014 (''April 2014 Final Rule''). 79 FR 22277. Specifically, DOE clarified certain terms, procedures, and compliance dates to improve repeatability and provide additional detail compared to the prior version of the test procedure. DOE noted that the amendments in the April 2014 Final Rule would not affect the measured energy use of CRE as measured under the prior version of the test procedure. 79 FR 22277, 22280–22281. DOE's current test procedure incorporates by reference the following industry standards: (1) Air-Conditioning, Heating, and Refrigeration Institute (''AHRI'') Standard 1200 (I–P)-2010 (''AHRI 1200–2010''), ''Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets''; (2) the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (''ASHRAE'') Standard 72–2005 (''ASHRAE 72–2005''), ''Method of Testing Commercial Refrigerators and Freezers,'' which was approved by the American National Standards Institute (''ANSI'') on July 29, 2005; and (3) ANSI/Association of Home Appliances (''AHAM'') Standard HRF–1–2008 (''AHAM HRF–1–2008''), ''Energy, Performance, and Capacity of Household Refrigerators, Refrigerator-Freezers, and Freezers,'' for determining refrigerated volumes for CRE.

## II. Request for Information

DOE is publishing this RFI to collect data and information during the early assessment review to inform its decision, consistent with its obligations under EPCA, as to whether the Department should proceed with an amended test procedure rulemaking, and if so, to assist in the development of proposed amendments. Accordingly, in the following sections, DOE has identified specific issues on which it seeks input to aid in its analysis of whether an amended test procedure for CRE would more accurately or fully comply with the requirement that the test procedure produces results that measure energy use during a representative average use cycle for the product, and not be unduly burdensome to conduct. DOE also welcomes comments on other issues relevant to its early assessment that may not specifically be identified in this document.

*A. Scope and Definitions*

CRE means refrigeration equipment that is not a consumer product (as defined in 10 CFR 430.2); is not designed and marketed exclusively for medical, scientific, or research purposes; operates at a chilled, frozen, combination chilled and frozen, or variable temperature; displays or stores merchandise and other perishable materials horizontally, semi-vertically, or vertically; has transparent or solid doors, sliding or hinged doors, a combination of hinged, sliding, transparent, or solid doors, or no doors; is designed for pull-down temperature applications or holding temperature applications; and is connected to a self-contained condensing unit or to a remote condensing unit. 10 CFR 431.62.

1. Ice-Cream Freezers

DOE further defines categories of CRE, including ''ice-cream freezer.'' DOE defines an ice-cream freezer as a commercial freezer that is designed to operate at or below −5 °F (±2 °F) (−21 °C ± 1.1 °C) and that the manufacturer designs, markets, or intends for the storing, displaying, or dispensing of ice cream. 10 CFR 431.62. As such, under this definition, equipment not designed, marketed, or intended specifically for the storage, display, or dispensing of ice cream, would not be considered an ''ice-cream freezer,'' regardless of operating temperature.

A manufacturer's design intent may not always be explicit for all CRE. For example, a manufacturer may design a model capable of storing, displaying, or dispensing of ice cream, and intend for that operation when in use, but only specify technical operating parameters in the manufacturer literature for that model with no explicit reference to ice cream. In such a case, the

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

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

manufacturer's design intent would be unknown to a third party.

DOE is considering amendments to the definition of ice-cream freezer that would incorporate technical features and characteristics to better delineate this equipment from other commercial freezers.

*Issue 1:* DOE requests comment on the technical features that characterize ice cream freezers and distinguish them from commercial freezers capable of operating at or below −5 °F (±2 °F).

Additionally, the ice-cream freezer definition references ''ice cream'', but the term is not specifically defined. Gelato, frozen yogurt, and other ice-cream-like products are typically displayed, stored, or dispensed in the same manner as ice-cream. The CRE used for these food products is likely similar, if not identical, to equipment used to store, display, or dispense ice cream.

*Issue 2:* DOE requests comment on if further specificity is needed for the term ''ice-cream''. DOE is also interested in whether manufacturers are certifying equipment intended to store gelato or other ice-cream like products as ice-cream freezers or freezers.

Appendix B requires testing all ice-cream freezers to an integrated average temperature (''IAT'') [3] of −15 °F. However, the term ''ice-cream freezer'' includes a variety of equipment with a range of typical operating temperatures during normal use. For example, certain ice-cream freezers are designed to operate considerably below −5 °F (sometimes referred to as ''hardening'' cabinets and specifically designed for ice cream storage), while other ice-cream freezers are designed to operate closer to 0 °F during typical use (*e.g.,* ''dipping cabinets'' and other equipment used to hold ice cream intended for immediate consumption). Ice-cream freezers intended for higher-temperature operation are often not capable of achieving an IAT of −15 °F. In such an instance, Appendix B requires testing the units to the lowest application product temperature (''LAPT'').

Of the 445 ice-cream freezer models certified to DOE,[4] 55 are rated based on LAPTs warmer than −15 °F, including 29 models with a rating temperature of −5 °F. Many of these models are horizontal or service over counter and intended to hold ice cream for immediate consumption. Accordingly, testing at an IAT of 0 °F may be more representative of typical operation than testing to the LAPT for these models.

If certain ice-cream freezers not capable of reaching an IAT of −15 °F should instead be tested at an IAT of 0 °F, there may be an opportunity to better distinguish between ice-cream freezers and other freezers, as discussed earlier in this section. For example, the ice-cream freezer definition could be revised to refer to any freezer capable of operating at an IAT of −15 °F, regardless of the product stored in the equipment. Any other equipment currently meeting the ice-cream freezer definition but not capable of reaching an IAT of −15 °F would instead be classified and tested as freezers, not ice-cream freezers. Such an approach would use the measured IAT of the equipment as the foundation for this equipment definition, thus eliminating the reliance on manufacturer intent or the end use of the equipment.

*Issue 3:* DOE seeks feedback on whether equipment that meets the current ice-cream freezer definition but cannot operate at an IAT of −15 °F ± 2 °F should be tested at an IAT of 0 °F ± 2°F instead of the LAPT.

*Issue 4:* DOE additionally requests comment on whether the ice-cream freezer definition should only refer to equipment that is capable of achieving an IAT of −15 °F ± 2 °F without any reference to the manufacturer's designed, marketed, or intended use.

2. High-Temperature CRE

Section 2.1 of Appendix B requires testing commercial refrigerators to an IAT of 38 °F ± 2 °F. DOE is aware of equipment that meets the definition of a commercial refrigerator but is capable of operating only at temperatures above the 38 °F ± 2 °F IAT required for testing. Consistent with the current test procedure, manufacturers certify such equipment using the LAPT setting. Examples of these types of equipment include CRE designed for storing or displaying chocolate and/or wine, with typical recommended storage temperatures around 55 °F.

DOE is considering adding a definition for ''high-temperature refrigerator'' to better delineate commercial refrigerators not capable of operating at the IAT required for testing a commercial refrigerator. DOE is also considering establishing separate test requirements for high-temperature refrigerators, including the IAT required for testing. For consumer refrigeration products, DOE established the miscellaneous refrigeration product category to capture such products, with ''coolers'' tested at a standardized cabinet temperature of 55 °F.[5]

*Issue 5:* DOE requests comment on whether an IAT of 55 °F ± 2 °F is an appropriate test condition for commercial high-temperature refrigerators. DOE also requests data on the typical operating temperatures of CRE that operate above an IAT of 38 °F ± 2 °F.

*Issue 6:* DOE requests comment on whether any additional changes or clarifications are needed to the test procedure to better account for the energy consumption of commercial high-temperature refrigerators. For example, DOE requests information on whether the current loading and door-opening requirements are appropriate for high-temperature CRE.

*B. Updates to Industry Test Standards*

As discussed previously, DOE's test procedure for CRE currently incorporates by reference AHRI 1200–2010, ASHRAE 72–2005, and AHAM HRF–1–2008. 10 CFR 431.63. AHRI 1200–2010 also references ASHRAE 72–2005 and AHAM HRF–1–2008.

Since establishing the DOE test procedure in Appendix B, AHRI, ASHRAE, and AHAM have published updated versions of the referenced test standards. On October 1, 2013, ANSI approved an updated version of AHRI 1200, ANSI/AHRI Standard 1200 (I–P), ''2013 Standard for Performance Rating of Commercial Refrigerated Display Merchandizers and Storage Cabinets,'' (''AHRI 1200–2013''). On August 1, 2018, ANSI approved an updated version of ASHRAE 72, ANSI/ASHRAE Standard 72–2018, ''Method of Testing Open and Closed Commercial Refrigerators and Freezers,'' (''ASHRAE 72–2018''). AHAM more recently approved and published an updated version of its industry test standard, AHAM HRF–1–2019, ''Energy and Internal Volume of Refrigerating Appliances,'' (''AHAM HRF–1–2019''). The changes within these updated industry test standards are either editorial, to improve clarity, to better harmonize with the DOE test procedure, or relevant to other product types (*e.g.,* consumer refrigerators). Based on DOE's initial assessment, the changes in the updated versions of the industry test standards would not impact the measured energy consumption, volume, or Total Display Area (''TDA'') of CRE, as applicable.

DOE is considering whether to update the current CRE test procedure and incorporate by reference the updated

[3] Integrated average temperature means the average temperature of all test package measurements taken during the test. 10 CFR 431.62.

[4] Based on review of DOE's Compliance Certification Database, available at *https://www.regulations.doe.gov/certification-data* (accessed February 5, 2021).

[5] See 10 CFR part 430, subpart B, appendix A, section 3.2.

industry test standards: AHRI 1200–2013, ASHRAE 72–2018, and AHAM HRF–1–2016. These references would replace previous references to the superseded AHRI 1200–2010, ASHRAE 72–2005, and AHAM HRF–1–2008 standards referenced in the current CRE test procedure.

DOE is also aware of updates being considered for AHRI 1200–2013 and ASHRAE 72–2018. DOE has participated in the industry committee meetings in which updates to these industry standards are being developed. Based on these meetings, the changes being considered by the industry committee appear intended largely to improve the clarity, consistency, and representativeness of the industry test methods. For these and the other referenced industry standards, were DOE to determine to propose an amended CRE test procedure, DOE would consider adopting the most updated industry test procedures available during the course of such a rulemaking.

*Issue 7:* DOE requests comment on whether it should reference the most recent versions of AHRI 1200 or ASHRAE 72 and whether any of the updates to these standards would have an impact on the measured energy consumption of CRE, and if so, how. DOE additionally requests comment on whether the CRE test procedure should reference the most current version of AHAM HRF–1 and whether any of the updates to that standard would have an impact on measured volume, and if so, how.

AHRI has another rating standard applicable to CRE that use a secondary coolant or refrigerant, AHRI Standard 1320 (I–P), ''2011 Standard for Performance Rating of Commercial Refrigerated Display Merchandisers and Storage Cabinets for Use With Secondary Refrigerants,'' (''AHRI 1320–2011''), approved by ANSI on April 17, 2012. AHRI 1320–2011 is applicable to cases that are equipped and designed to work with electrically driven, medium-temperature, single-phase secondary coolant systems, but excludes equipment used for low-temperature applications, secondary coolants involving a phase change (*e.g.,* ice slurries or carbon dioxide), and self-contained CRE. AHRI 1320–2011 includes similar rating temperature conditions as those in AHRI 1200–2013 and references ASHRAE 72–2005 and AHAM HRF–1–2008 for the measurement of energy consumption and calculation of refrigerated volume, respectively. The only substantive differences between AHRI 1200–2013 and AHRI 1320–2011 are the inclusion of secondary refrigerant circulation pump energy consumption in the calculation of total daily energy consumption and revised coefficients of performance to determine compressor energy consumption. DOE is evaluating AHRI 1320–2011 as a potential test method to rate CRE that use secondary refrigerants.

*Issue 8:* DOE requests comment on whether AHRI 1320–2011 would be an appropriate test method to measure the total daily energy consumption of CRE that use a secondary refrigerant circuit, and whether it would provide representative measurements of energy use. DOE also seeks information and data on CRE designed to work with electrically driven, medium-temperature, single-phase secondary coolant systems, including the typical field installations and operating conditions.

*Issue 9:* DOE also requests comment on whether manufacturers sell or plan to sell CRE with secondary coolant that would be outside the stated applicability of AHRI 1320–2011, including low-temperature equipment or CRE using secondary coolants with a phase change (*e.g.,* ice slurries or carbon dioxide), and on whether any other existing test standards are appropriate for rating such equipment.

### *C. Test Conditions for Specific CRE Categories*

DOE has identified specific categories of CRE that are not currently subject to the DOE test procedure. These certain categories of CRE either cannot be tested using DOE's current test procedure or the current test procedure may not be representative of their use. These categories are discussed in the following paragraphs. In this RFI, DOE is considering whether amendments are warranted to DOE's current test procedures to provide for the appropriate testing of such categories of CRE. This section discusses potential definitions and test procedures for each category of CRE identified. Additionally, the U.S. Environmental Protection Agency (''EPA'') ENERGY STAR program recently announced that it is considering three of these equipment categories for scope expansion and test method development: Refrigerated preparation and buffet tables; chef bases or griddle stands; and blast chillers and freezers.[6] DOE will consider information gathered through that process when determining whether these equipment categories should be defined and included within the scope of DOE's CRE test procedure.

#### 1. Salad Bars, Buffet Tables and Refrigerated Preparation Tables

Salad bars, buffet tables, and other refrigerated holding and serving equipment, such as refrigerated preparation tables, are CRE that store and display perishable items temporarily during food preparation or service. These units typically have easily accessible or open bins that allow convenient and unimpeded access to the refrigerated products. In the April 2014 Final Rule, DOE did not include test procedures for this equipment, but maintained that this equipment meets the definition of CRE and could therefore be subject to future test procedures and energy conservation standards. 77 FR 22278, 22281. In this RFI, DOE is considering definitions and test procedures applicable to salad bars, buffet tables, and refrigerated preparation tables.[7] As discussed in sections II.C.4 and II.C.5 of this RFI, DOE is also requesting information on other refrigerated holding and serving equipment, including definitions and appropriate test procedures.

ASTM International F2143–16 ''Standard Test Method for Performance of Refrigerated Buffet and Preparation Tables'' (''ASTM F2143–16'') provides the following definitions for refrigerated buffet and preparation tables:

- *Refrigerated buffet and preparation table*—equipment designed with a refrigerated open top or open condiment rail.
- *Refrigerated buffet table or unit*—equipment designed with mechanical refrigeration that is intended to receive refrigerated food and maintain food product temperatures and is intended for customer service such as a salad bar. A unit may or may not be equipped with a lower refrigerated compartment.
- *Refrigerated food preparation unit*—equipment designed with a refrigerated open top or open condiment rail such as refrigerated sandwich units, pizza preparation tables, and similar equipment. The unit may or may not be equipped with a lower refrigerated compartment.

DOE will consider these definitions if it determines that definitions for these equipment categories are appropriate. DOE notes that certain terms used within these definitions are undefined

[6] Information and materials for ENERGY STAR's Specification Version 5.0 process are available at *https://www.energystar.gov/products/spec/commercial_refrigerators_and_freezers_specification_version_5_0_pd.*

[7] While the April 2014 Final Rule did not specifically refer to refrigerated preparation tables, DOE is considering them in this RFI because they have similar features to salad bars and buffet tables (*e.g.,* an open top holding refrigerated pans) and are used during food preparation.

(*e.g.,* condiment rails, food product temperatures). Additionally, DOE is not aware of any other industry standard definitions for these equipment types (nor for salad bars). DOE is requesting feedback to better understand the appropriate terms, definitions, and operating characteristics of salad bars, buffet tables, and refrigerated preparation. This information would inform DOE's decision to group or differentiate different types of equipment within this category in any eventual definitions or test procedures.

*Issue 10:* DOE requests comment on the suitability of the ASTM F2143–16 definitions for refrigerated buffet and preparation tables (and also their applicability to salad bars) as potential regulatory definitions for this equipment. DOE requests comment on whether any further delineation of the equipment category, salad bars, buffet tables, and refrigerated preparation tables, is necessary to account for the range of performance related features available in this equipment (*e.g.,* presence of pan covers, refrigerated storage compartments, and any other unique configurations or features that may require consideration for any potential test procedures).

*Issue 11:* DOE requests comment on the specific features and equipment capabilities that should be included in definitions for refrigerated salad bars, buffet tables, and preparation tables. For example, DOE seeks information on the factors that would differentiate this equipment from other typical CRE. DOE also requests whether potential definitions should specify temperature operating ranges, and if so, what the appropriate ranges would be.

The configuration of salad bars, buffet tables, and refrigerated preparation tables may also raise questions as to whether a unit is commercial hybrid refrigeration equipment. *Commercial hybrid refrigeration equipment* is a unit of CRE (1) that consists of two or more thermally separated refrigerated compartments that are in two or more different equipment families, and (2) that is sold as a single unit. 10 CFR 431.62. Additional detail may be necessary to distinguish between a unit that is a salad bar, buffet table, or refrigerated preparation table and a unit that is commercial hybrid equipment that includes a salad bar, buffet table, or refrigerated preparation table. Refrigerated salad bars, buffet tables, and preparation tables typically have removable pans or bins that directly contact the chilled air in the refrigerated compartment of the unit. With that configuration, the entirety of the chilled compartment and surface pans would potentially be considered a refrigerated salad bar, buffet table, or preparation table. In contrast, if a unit includes solid partitions between the chilled compartment and the pans or bins on top of the unit, such a configuration would potentially be considered thermal separation and the unit would be considered a commercial hybrid consisting of a refrigerated salad bar, buffet table, or preparation table with a refrigerator and/or freezer.

*Issue 12:* DOE requests comment on whether the presence of thermally separating partitions should be considered as a factor to differentiate between refrigerated salad bars, buffet tables, and preparation tables on the one hand, and commercial hybrid units consisting of a refrigerated salad bar, buffet table, or preparation table with a refrigerator and/or freezer on the other hand.

In conjunction with considering definitions for this equipment, DOE is also considering whether to adopt a test procedure to evaluate their energy consumption. DOE reviewed ASTM F2143–16 and noted several differences between this test method and DOE's current test procedure for CRE.

Specifically, ASTM F2143–16 specifies different rating conditions for test room dry-bulb temperature and moisture content than the current DOE test procedure. Table II–1 summarizes these differences.

TABLE II–1—TEST ROOM DRY-BULB TEMPERATURE & MOISTURE CONTENT STANDARDS COMPARISON

| Equipment type | Test standard | Test room dry bulb temperature | Wet bulb temperature (relative humidity) | Moisture content (lb/lb dry air) |
|---|---|---|---|---|
| Currently Covered CRE | ASHRAE 72–2005 (incorporated by reference). | 75.2 °F ± 1.8 °F | 64.4 °F ± 1.8 °F (49–62 percent*) | 0.009–0.011 |
| Buffet and Preparation Tables | ASTM F2143–16 | 86 °F ± 2 °F | 66.2 °F ± 1.8 °F* (30–40 percent) | 0.008–0.010 |

*Equivalent value from psychrometric conversion. ASHRAE 72–2005 specifies web bulb temperature, while ASTM F2143–16 specifies relative humidity.

*Issue 13:* DOE requests comment and supporting data on test room dry-bulb temperature and moisture content typically experienced by refrigerated salad bars, buffet tables, and preparation tables operating in the field. DOE requests comment on whether these conditions are significantly different from those encountered by conventional CRE and would justify adopting separate rating conditions for refrigerated salad bars, buffet tables, and preparation tables.

For measuring these ambient conditions, ASHRAE 72–2018 and ASTM F2143–16 specify the same measurement locations; however, the locations may require further specificity depending on the configuration of the refrigerated salad bar, buffet table, or preparation table under test. For example, is the measurement location based on the highest point of the unit under test could be based on the height of the refrigerated table surface and pan openings or on the height of any lid or cover over the pans, if included. Additionally, the measurement location at the center of the unit could be based on the geometric center of the unit determined from the height of the open pan surfaces or on the geometric center of any door openings (for those units with refrigerated compartments below the pan area).

*Issue 14:* DOE requests comment on the appropriate locations for recording ambient conditions when testing refrigerated salad bars, buffet tables, and preparation tables to ensure repeatable and reproducible testing for a range of equipment configurations.

DOE notes that ASTM F2143–16 specifies temperature measurements for refrigerated preparation or buffet tables be taken from standardized pans filled with distilled water. ASTM F2143–16 also specifies measuring the temperature in any chilled compartments for refrigerated buffet and preparation tables using three thermocouples in an empty, unloaded compartment. DOE's current test procedure, which incorporates by reference ASHRAE 72–2005 and AHRI 1200–2010, requires that integrated average temperature measurements be taken from test simulators consisting of a plastic container filled with a sponge saturated with a 2-percent mixture of propylene glycol and distilled water. See ASHRAE 72–2005, section 6.2.1. Additionally, the DOE test procedure

requires 70 to 90 percent of the compartment net usable volume to be loaded with filler material and test simulators for testing. See ASHRAE 72–2005, section 6.2.5. Refrigerated salad bars, buffet tables, and preparation tables may not typically be loaded to 70 percent of their net usable volume due to their use for service rather than long-term storage but testing with the refrigerated compartment entirely empty also may not be representative of average use.

*Issue 15:* DOE requests comment on the appropriateness of using only distilled water as the test medium to represent thermo-physical properties of foods that are typically stored in the surface pans of refrigerated salad bars, preparation tables, or buffet tables. DOE requests comment on whether adopting test packages and filler materials similar to DOE's current test procedure (as specified in ASHRAE 72–2005) may better represent the properties of these foods, instead of distilled water.

*Issue 16:* DOE requests comment on the feasibility of requiring temperature measurements in closed refrigerated compartments of refrigerated salad bars, buffet tables, and preparation tables using test packages as specified in ASHRAE 72, and whether the compartments should be loaded with any filler packages (and to what percent of the net usable volume) for testing. If the test packages are not appropriate for measuring compartment temperatures, DOE requests comment on alternatives that should be used instead (*e.g.,* thermocouples located in pans filled with distilled water, thermocouples as specified in ASTM F2143–16, or weighted thermocouples).

Additionally, ASTM F2143–16 specifies the pans for holding water to be standard 4-inch deep 1/6-size metal steam table pans with a weight of 0.70 ± 0.07 lb. ASTM F2143–16 allows for manufacturer specified pans if the unit is designed specifically for such pans. DOE notes that manufacturers typically specify pan dimensions or provide pans for their units, but some manufacturers do not provide a pan depth or may specify a range of possible pan depths. DOE also notes that pan materials can vary and are not always specified by the manufacturer.

*Issue 17:* DOE requests comment on whether pan dimensions should be standardized if testing refrigerated salad bars, buffet tables, and preparation tables is required, or whether these units should be tested with pans meeting manufacturer-recommended pan dimensions. If pans were standardized, DOE requests comment on whether the dimensions described in ASTM F2143–16 are appropriately representative of what is used, or whether another set of dimensions or materials would be more appropriate. DOE also requests information on whether the pan material should be defined in greater detail, recognizing that ASTM F2143–16 specifies only that the pans be ''metal.''

Section 10.5.6 of ASTM F2143–16 specifies that if it is possible to control cooling to the display area independently of the refrigerated cabinet, the cooling to the display area is turned off and all pans are to be moved from the display area to the refrigerated cabinet underneath after the active period. The ability to control cooling in both the display area and the refrigerated cabinet independently of each other suggests that this language applies to units with thermally-separated compartments and pan areas, which may be considered commercial hybrid refrigeration equipment.

*Issue 18:* DOE requests comment on whether moving pans from the display area to the refrigerated compartment as specified in section 10.5.6 of ASTM F2143–16 is appropriate for testing refrigerated salad bars, buffet tables, and preparation tables. DOE further requests feedback on whether storing pans in a refrigerated compartment is typical only for those units with certain configurations—*e.g.,* thermal separation between the compartment and refrigerated pan area or closable covers for the pan area.

As described, refrigerated salad bars, buffet tables, and preparation tables store and display perishable items temporarily during food preparation or service. Due to the short duration of use of salad bars, buffet tables, and preparation tables, these equipment types may not be used for the same 24-hour duration used to characterize performance for other categories of CRE. However, ASTM F2143–16 specifies a 24-hour test, with an active period of 8 hours and a standby period of 16 hours. The active period provisions contain instructions for a cover, if equipped: Open for 2 hours, closed for 4 hours, open for 2 hours. These provisions also contain instructions for a door opening sequence: Every 30 minutes, each cabinet door or drawer, or both, shall be fully opened sequentially, one at a time, for 6 consecutive seconds. For units with pass-thru doors, only the doors on one side of the unit are opened.

*Issue 19:* DOE requests comment on the typical daily usage of refrigerated salad bars, buffet tables, and preparation tables. Additionally, DOE requests feedback on whether these CRE are used for long-term storage of food or only short-term storage during food preparation or service periods. DOE also requests comment on whether the daily use of this equipment varies depending on configuration or other technical characteristics.

*Issue 20:* DOE requests comment on the applicability of the ASTM F2143–16 door and cover opening specifications. If the ASTM door and cover opening requirements are not representative of typical use, DOE requests comment on an appropriate door and cover opening sequence. For example, DOE requests comment on whether the door-opening requirements specified in ASHRAE 72–2018 are appropriate for refrigerated salad bars, buffet tables, and preparation tables.

ASHRAE 72–2018 and ASTM F2143–16 have different loading requirements for stabilization. ASTM F2143–16 specifies that the unit operates with empty pans for at least 2 hours, water be pre-cooled before being loaded into the pans, and, once the water has been loaded into the pans, that the thermostat be calibrated until the pan temperatures are never outside of 33 °F to 41 °F for any 15-minute period over a 4-hour measurement period. Although ASHRAE 72–2018 does not specify how to test units with display pans, it generally provides that the unit be loaded with test simulators and filler packages and then operated to establish steady-state conditions over consecutive 24-hour periods or refrigeration cycles.

*Issue 21:* DOE requests comment on the appropriate stabilization method to use when testing refrigerated salad bars, buffet tables, and preparation tables.

ASTM F2143–16 instructs that if a buffet or preparation table is equipped with a refrigerated compartment, the compartment air temperature is to be between 33 °F and 41 °F. Likewise, the water temperature of the pans placed in the display area also are to be between 33 °F and 41 °F. Alternatively, the DOE test procedure for other CRE requires IATs of 38 °F ± 2.0 °F for medium temperature applications. Through preliminary research, DOE has found that buffet and preparation tables use a variety of refrigeration methods for cooling the pans in the display area and the refrigerated compartment. In some configurations, units might not be able to maintain all pans and the refrigerated compartment within the specified temperature range. For example, units with a single refrigeration system and thermostat control for temperatures in either the refrigerated compartment or in the pans. As a result, it may be possible for only the refrigerated compartment or the pans, but not both,

to be kept within a specified temperature range during operation.

*Issue 22:* DOE requests comment on appropriate temperature ranges for all pans and compartments during testing, and whether the test temperature should be specified as an allowable range or as a target IAT with a specified tolerance. Additionally, if a target IAT is appropriate, the pans and any refrigerated compartment IAT could be measured separately from each other, or all temperature measurement locations within the refrigerated compartment and pans could be averaged together to determine a single IAT. If separate IATs of the pans and the compartment should be used, DOE requests comment on which IAT should be used to determine the appropriate thermostat control (if the unit only has one overall temperature control).

ASTM F2143–16 specifies the reporting of ''production capacity,'' which is defined as the total volume of the pans when each pan is filled within one-half inch of the rim. However, energy consumption of refrigerated buffet and preparation tables likely varies with pan volume as well as the volume of any closed refrigerated compartments. Therefore, both values are of interest when considering metrics that define energy performance. Additionally, pan surface area could be another possible metric that defines energy performance, similar to TDA for horizontal open equipment classes. This method may eliminate the variability with different test pan dimensions. However, using either pan surface area or TDA as the relevant performance metric may lead to difficulty when also accounting for the storage volume of any refrigerated compartments in the equipment.

*Issue 23:* DOE requests comment on the potential methodologies for determining pan volume, pan surface area, and pan TDA, as well as refrigerated compartment volume for refrigerated salad bars, buffet tables, and preparation tables in a potential test procedure for this equipment. DOE additionally requests comment on which parameter(s) (*e.g.,* total pan volume, pan surface area, TDA, or a combined metric), may best represent the useful ''capacity'' of this equipment.

ASTM F2143–16 does not account for defrost cycles when testing this equipment, other than indicating in the test report whether a defrost cycle occurred. ASHRAE 72–2018 directs that the test period begins with a defrost cycle. Defrost cycles increase the energy consumption of refrigeration equipment; however, through preliminary research, DOE has found that most refrigerated salad bars, buffet tables and preparation tables use off-cycle defrosts, which melt any frost accumulation through the evaporator fan running during a compressor off-cycle. This method of defrost does not actively introduce heat to melt the accumulated frost and may occur during the compressor's normal cycling operation (*i.e.,* there may not be an identifiable defrost occurrence in the measured test data).

*Issue 24:* DOE requests comment on whether a possible test procedure should consider defrost cycles for refrigerated salad bars, buffet tables, and preparation tables, and if so, how.

2. Pull-Down Temperature Applications

As defined, a CRE must be designed for holding temperature applications [8] or pull-down temperature applications. 10 CFR 431.62 (42 U.S.C. 6311(9)(A)(vi)) ''Pull-down temperature application'' is a commercial refrigerator with doors that, when fully loaded with 12-ounce beverage cans at 90 °F, can cool those beverages to an average stable temperature of 38 °F in 12 hours or less. 10 CFR 431.62 (42 U.S.C. 6311(9)(D)). CRE within this definition are typically known as beverage merchandisers or beverage coolers because of their use in displaying individually packaged beverages for sale, and their ability to rapidly cool such beverages. Such equipment with transparent doors is currently subject to DOE's test procedures set forth at 10 CFR 431.64 and required to comply with the energy conservation standards specified at 10 CFR 431.66(e).

DOE's current CRE test procedure does not include any procedure to verify a unit's pull-down performance for CRE meeting the pull-down temperature application definition. For example, the test procedure does not provide instructions for the starting conditions of the equipment (*e.g.,* whether the equipment begins the test in a pre-cooled state or at ambient temperature conditions), loading of the cans (*e.g.,* whether the equipment must be loaded to full within a certain amount of time), or how to measure the temperature of the cans to confirm cooling to 38 °F.

*Issue 25:* DOE seeks information on whether CRE that provides pull-down temperature applications is sufficiently differentiated from other types of CRE. If not, DOE seeks comment on how manufacturers currently determine whether a model meets the pull-down temperature application criteria. DOE requests comment on appropriate starting conditions, loading methods, and other necessary specifications for a potential test method to verify the pull-down performance of a commercial refrigerator.

Whereas the current CRE test procedure specifies that commercial refrigerators designed for pull-down applications be tested at steady state (see 10 CFR 431.64(b), and Appendix B section 2.1), pull-down periods may account for a substantial amount of the energy these models consume in actual operation. In order to better reflect the representative energy consumption associated with pull-down periods, DOE is considering revising the test method for commercial refrigerators designed for pull-down applications to also reflect energy consumption during the pull-down period.

*Issue 26:* DOE requests comment and supporting data on the energy consumption associated with pull-down operation for commercial refrigerators designed for pull-down temperature applications, including the amount of time these models typically spend in both pull-down conditions and steady-state operation. DOE additionally requests comment on whether a modified test method (*i.e.,* one that accounts for both pull-down and steady state performance) might be more appropriate to represent the energy consumption of equipment in this class.

While the cooling criteria in the pull-down temperature application definition is in terms of cooling beverage cans, the definition is not explicitly limited to beverage merchandisers and beverage coolers. Other equipment with solid doors intended to rapidly cool or freeze food, commonly referred to as blast chillers and blast freezers, may also meet the pull-down temperature application definition. DOE does not define blast chiller and/or blast freezers. The California Code of Regulations (''CCR'') defines a blast chiller as a refrigerator designed to cool food products from 140 °F to 40 °F within four hours. (CCR, Title 20, section 1602) DOE seeks comment on whether there is equipment that is not a beverage merchandiser or beverage cooler, but that would meet the pull-down temperature application definitions.

*Issue 27:* DOE requests comment on whether definitions are needed for blast chillers and blast freezers to further delineate the equipment subject to the DOE test procedures and standards. If definitions are needed, DOE requests comment on the appropriate definitions for blast chillers and blast freezers, including how to differentiate such

[8] ''Holding temperature application'' means a use of commercial refrigeration equipment other than a pull-down temperature application, except a blast chiller or freezer. 10 CFR 431.62 (42 U.S.C. 6311(9)(B)).

equipment from CRE currently subject to testing and compliance with DOE's energy conservation standards.

DOE is not aware of any existing test methods for assessing the energy performance of equipment generally considered blast chillers and blast freezers. ASHRAE has established a standard project committee (''SPC'') to consider the development of an industry test standard for this equipment: SPC 220P, *Method of Testing for Rating Small Commercial Blast Chillers, Chiller-Freezers, and Freezers.*[9] DOE is participating in this process and will consider referencing publicly available industry standards as may be appropriate in any future test procedure rulemaking. DOE is requesting information on typical blast chiller and blast freezer operation to evaluate any eventual test methods available for this equipment

*Issue 28:* DOE requests comment and supporting data on the typical ambient conditions experienced by blast chillers and blast freezers.

*Issue 29:* DOE requests comment and supporting data on the typical usage settings for blast chillers and blast freezers and how different set-point modes affect energy performance. For units with multiple temperature settings within the refrigerator or freezer temperature range, DOE requests comment on which setting is appropriate for testing. Additionally, for units with settings that affect the pull-down duration, DOE requests comment on whether the fastest or slowest setting (or any other setting if more than two settings are provided) should be used for testing.

3. Chef Bases and Griddle Stands

DOE defines ''chef base or griddle stand'' as CRE that is designed and marketed for the express purpose of having a griddle or other cooking appliance placed on top of it that is capable of reaching temperatures hot enough to cook food. 10 CFR 431.62. In this RFI, DOE is requesting information and feedback regarding definitions and test procedures for chef bases and griddle stands.

As discussed in the April 2014 Final Rule, the explicit categorization of griddle stands is meant to accommodate equipment that experiences temperatures exceeding 200 °F. 79 FR 22278, 22282. However, DOE notes that the current definition for chef bases and griddle stands does not specify a quantitative means for determining the equipment that meets the definition, such as a temperature rating for cooking appliances placed on top of chef bases and griddle stands or specifications for the refrigeration systems to differentiate this equipment from typical CRE. Also, the DOE test procedure does not specify unique temperature test conditions for this equipment.

*Issue 30:* DOE requests comment on whether the definition for chef bases and griddle stands should be modified to include a specific temperature requirement for cooking appliances placed on top of chef bases and griddle stands, or other such specification. Specifically, DOE requests feedback on a quantifiable characteristics of chef bases and griddle stands that differentiate this equipment from other CRE. This includes information on appropriate temperature ranges and refrigeration system characteristics that could be used to classify equipment as chef bases and griddle stands.

DOE stated in the April 2014 Final Rule that chef bases and griddle stands are able to be tested according to the DOE test procedure, but their refrigeration systems require larger compressors to provide more cooling capacity per storage volume than equipment with compressors that are appropriately sized for conventional CRE and more typical room temperature conditions. As a result, this equipment tends to consume more energy than similarly sized, conventional CRE models. 79 FR 22278, 22281–22282. Although this equipment can be tested using DOE's current test procedure, the test room temperature conditions specified in DOE's test procedure may not represent the conditions experienced by chef bases and griddle stands in the field, due to the cooking equipment installed on top of such equipment. Specifically, the current CRE test procedure may not appropriately specify installation and setup for chef bases and griddle stands to reflect real-world conditions.

*Issue 31:* DOE requests comment on whether modifications to the current CRE test procedure would be appropriate for testing chef bases and griddle stands to better represent real-world use conditions. DOE specifically requests supporting data on the time per day that top-mounted cooking equipment is active, as well as typical temperatures of the cooking equipment when active, to gain an understanding of the magnitude of the resulting thermal loads. DOE also requests comment on whether the existing DOE test procedure is appropriate for measuring the energy use of this equipment.

4. Mobile Refrigerated Cabinets

DOE does not currently define or specify test procedures for other types of refrigerated holding and serving equipment such as certain mobile refrigerated cabinets. As discussed in the April 2014 Final Rule, DOE determined that such other types of refrigerated holding and serving equipment meet the definition of CRE and could be subject to future test procedures and energy conservation standards. 79 FR 22278, 22281. Specifically, mobile refrigerated cabinets chill the refrigerated compartment before being unplugged from power and taken to a remote location to hold food products while maintaining cooling. Such equipment meets the definition of CRE as defined at 10 CFR 431.62; however, unlike most typical CRE, mobile refrigerated cabinets are not continuously connected to a power supply. To better distinguish mobile refrigerated cabinets from other defined categories of CRE, DOE is considering developing definitions for this equipment.

*Issue 32:* DOE seeks information on the design features and operating characteristics of mobile refrigerated cabinets that would differentiate this equipment from other CRE or refrigerated salad bars, buffet tables, and preparation tables.

In addition to definitions, DOE is considering whether to develop a test procedure for mobile refrigerated cabinets. The operating conditions, installation locations, and usage characteristics for this equipment are likely very different compared to typical CRE. For example, as discussed, mobile refrigerated cabinets are not continuously connected to a power supply and may not have typical door openings for user access. To determine appropriate test procedures to evaluate the energy consumption of this equipment, DOE is requesting information on any characteristics of their operation. DOE is not aware of any industry standards that address performance of mobile refrigerated cabinets.

*Issue 33:* DOE requests comment on what test conditions (*e.g.,* temperature, moisture content) would be appropriate in a potential test procedure for mobile refrigerated cabinets, given that this equipment often operates in unique conditions and applications. DOE additionally requests comment on appropriate specifications for door openings, stabilization and test periods, and installation configurations for mobile refrigerated cabinets (including representative operating times when

[9] See *https://www.ashrae.org/technical-resources/standards-and-guidelines/project-committee-interim-meetings.*

connected and disconnected from a power supply). DOE seeks any data describing how these units are used in the field to help inform potential appropriate test conditions and procedures.

5. Additional Covered Equipment

DOE understands that there may be additional equipment available on the market that meet the definition for CRE, but otherwise do not meet the definitions for the existing equipment classes or additional equipment categories described in this section. One such example may be a unit used to chill and dispense condiments—for example cream in a coffee shop. Such units would meet the general CRE definition but may have different operation and customer use compared to equipment covered under the existing CRE equipment categories (*e.g.,* fewer door openings only for re-loading the product).

*Issue 34:* DOE requests feedback from interested parties on what other CRE may be available on the market that would require separate equipment category definitions and test procedures. Specifically, DOE seeks information on the relevant equipment features and utilities that would require separate equipment categories, as well as the impact of those features and utilities on energy use and whether the current test procedure would provide results of those impacts. DOE also requests any available information on potential definitions, test procedures, and usage data (specifically, how the typical daily energy use of the unique design compares to energy use of a unit of the most similar CRE equipment class) for these equipment categories.

*Issue 35:* DOE also requests comment on whether it should establish a definition for ''other refrigerated holding and serving equipment'' to clearly delineate equipment not currently subject to DOE's test procedure. DOE seeks feedback on an appropriate definition, and on the types of equipment it should cover.

Furthermore, DOE understands that there may be CRE that are currently categorized into existing equipment classes but may require different test requirements to reflect typical field usage. One example may be CRE that are typically used in cafeteria settings to store and provide access to cartons of milk, often referred to as ''milk coolers.'' Milk coolers may have longer door openings during a relatively short period of the day (*i.e.,* ''lunch hour''). Another such example may be CRE that are specifically designed to only operate outdoors. Such units may operate in different real-world ambient conditions compared to the other CRE (and the DOE test procedure). Similarly, unique shelves or loading configurations may require additional test instructions. For example, the DOE test procedure loading requirements may not be appropriate (or possible) for floral display merchandisers with unique shelf setups.

*Issue 36:* DOE requests feedback from interested parties on whether any additional or different test requirements are needed for CRE that meet the definitions for the existing equipment classes but may have sufficiently unique applications from other equipment in the same class. Specifically, DOE seeks information on how these requirements should be addressed in the test procedure and how the equipment's typical usage in the field is different than other CRE within the respective equipment class. DOE also requests comment and information on how it should be determined whether alternate test conditions should apply.

*Issue 37:* DOE also requests comment on whether DOE could further clarify the use of supplemental test instructions to address alternate testing requirements for specific CRE applications in order to provide more representative results.

*D. Harmonization of Efficiency Standards and Testing With NSF 7–2019 Food Safety*

NSF International (''NSF'') [10]/ANSI 7–2019, ''Commercial Refrigerators and Freezers,'' (''NSF 7–2019'') establishes minimum food protection and sanitation specifications for the materials, design, manufacture, and performance of commercial refrigerators and freezers and their related components. The current CRE test procedure allows Type I (designed to operate in 75 °F ambient conditions) and Type II (designed to operate in 80 °F ambient conditions) display refrigerators to be tested at NSF conditions, provided that these conditions result in higher energy consumption than the conditions specified by the DOE test procedure. Appendix B, section 2.3. To that end, the ambient temperature may be higher, but not lower than the DOE test condition; and the IAT may be lower, but not higher, than that measured at the DOE ambient test condition. *Id.* The test conditions, and possible different thermostat settings, under NSF 7–2019 may result in measured energy use that is more representative of average use in applications for which users prioritize food safety over energy efficiency. Permitting the use of the NSF 7–2019 test conditions may also reduce testing burden for manufacturers.

*Issue 38:* To ensure further that the DOE test procedure is appropriately representative, and to potentially decrease manufacturer test burden, DOE requests comment on ways in which the DOE test procedure may be modified to better harmonize with NSF 7–2019, if appropriate. DOE specifically requests comment on potential test requirements related to food safety that could be specified to ensure that equipment is tested as it would operate in the field.

*E. Dedicated Remote Condensing Units*

DOE is also aware of remote condensing CRE models where specific dedicated condensing units are intended for use with specific refrigerated cases. DOE has identified such equipment through manufacturer literature, installation instructions, and vendor information treating the entire system as a single model. In many of these situations, the remote condensing units are intended to be installed on or near the refrigerated case within the same conditioned space. In other situations, the remote condensing units are intended to be installed outdoors, but the refrigerated case is intended to be used specifically with the designated remote condensing unit.

For this equipment, the combined refrigerated case and condensing unit refrigeration system would effectively operate as if it were a CRE with a self-contained condensing unit. Under the current DOE test procedure, remote CRE energy consumption is determined from the energy use of components in the refrigerated case plus a calculated compressor energy consumption based on the enthalpy change of refrigerant supplied to the case at specified conditions. The compressor energy use calculation is based on typical reciprocating compressor energy efficiency ratios (''EERs'') at a range of operating conditions. See Table 1 in AHRI 1200–2010. For CRE used with dedicated condensing units, the actual compressor used during normal operation is known (*i.e.,* the compressor in the dedicated condensing unit). Accordingly, testing the whole system using the same approach as required for a self-contained CRE may produce energy use results that are more representative of how this equipment actually operates in the field. Additionally, testing such a system as a complete system rather than using the test procedures for remote condensing units may be less burdensome because

[10] Founded in 1944 as the National Sanitation Foundation, the organization changed its name to NSF International in 1990.

it would not require use of a test facility capable of maintaining the required liquid and suction line refrigerant conditions as currently required for testing remote CRE (*i.e.,* the refrigerant conditions consistent with the ASHRAE 72–2005 requirements and at the conditions necessary to maintain the appropriate case temperature for testing).

*Issue 39:* DOE seeks feedback on whether CRE with dedicated remote condensing units should be tested to evaluate the performance of the paired condensing unit and refrigerated case, rather than assuming a condensing unit EER as specified in the AHRI 1200 standards.

*Issue 40:* DOE requests information on how to identify whether testing with a dedicated remote condensing unit is appropriate for a particular system (rather than the typical remote CRE testing under the existing approach). For example, such testing could be required only when manufacturers specify specific dedicated remote condensing units for use with a remote refrigerated case.

*Issue 41:* DOE requests comment on appropriate test installations and conditions for testing CRE with paired remote condensing units. For example, both the refrigerated case and dedicated remote condensing unit could be installed within the same conditioned space, resulting in a test similar to that required for CRE with self-contained condensing units.

Refrigerated cases do not always specify dedicated remote condensing units with which to be matched. Having performance information for both the refrigerated cases and separate dedicated remote condensing units would allow users to compare the performance of both parts of the system when matched.

*Issue 42:* DOE also requests comment on whether, and if so how, users of CRE consider the energy performance of the system in instances in which a specific dedicated remote condensing unit is not identified for a refrigerated case. DOE requests comment on potential approaches to evaluate the energy performance of dedicated remote condensing units independent of their use with specific refrigerated cases.

### *F. Test Procedure Clarifications and Modifications*

#### 1. Defrost Cycles

The test period requirements in ASHRAE 72–2005, incorporated by reference in the current CRE test procedure, and in ASHRAE 72–2018 require starting the 24-hour test period with a defrost after steady-state conditions are achieved.[11] This method introduces a degree of variability in the measured energy consumption when the 24-hour period does not end at the end of a complete defrost cycle (the period from one defrost to the next) (*i.e.,* the test period captures a portion of a defrost cycle rather than complete defrost cycles). Typically, if multiple complete defrost cycles occur within the 24-hour period, the impact of capturing partial defrost cycles is small. Similarly, if the defrost cycle duration is slightly greater than 24-hours, the impact of capturing a partial defrost cycle will be small. However, the impact may be more substantial if the defrost cycle duration is very long (*i.e.,* multiple days between defrost) or if the defrost cycle is slightly less than 24 hours (*i.e.,* the test period would capture two defrost occurrences but only one period of ''normal'' operation between defrosts). DOE also notes that ASHRAE 72–2005 does not have any provisions for addressing the possibility of CRE with variable defrost control schemes (*i.e.,* defrosts that may be triggered based on conditions or other parameters rather than only a timer) or CRE with no automatic defrost (*i.e.,* manual defrost).

DOE has addressed similar issues in the test procedures for consumer refrigeration products. The test procedures for those products apply a two-part test period (one period for steady-state operation and one period to capture events related to the defrost cycle) to account for defrost energy consumption for products with long defrost cycle durations or with variable defrost control. The energy use calculations then weight the performance from each test period based on the known compressor runtime between defrosts or based on a calculated average time between defrosts in field operation that is based on the control parameters for variable defrosts. See appendices A and B to subpart B of 10 CFR part 430.

Additionally, DOE has addressed testing of certain commercial units that do not have automatic defrost in a waiver granted to AHT Cooling Systems GmbH and AHT Cooling Systems USA Inc. (''AHT'') published on October 30, 2018. 83 FR 54581. For basic models subject to the waiver the test period begins after steady state conditions occur (instead of beginning with a defrost cycle) and that the door-opening period begin 3 hours after the start of the test (instead of 3 hours after a defrost cycle). 83 FR 54581, 54583. DOE also granted AHT an interim waiver for testing certain models with defrost cycles longer than 24 hours. 82 FR 24330 (May 26, 2017; ''May 2017 Interim Waiver''). The interim waiver requires that AHT test the specified models using a two-part test method similar to the method for consumer refrigerators, with the first part capturing normal compressor operation between defrosts, including an 8-hour period of door openings, and the second part capturing all operation associated with a defrost, including any pre-cooling or temperature recovery following the defrost. 82 FR 24330, 24332–24333.

*Issue 43:* DOE requests comment on the impact of the potential defrost cycle variability and whether the test period should be revised to minimize the effects of defrost cycle duration for certain equipment. DOE additionally requests comment and supporting data on how incorporating a two-part test procedure may impact measured energy consumption, test burden, and repeatability and reproducibility. Additionally, DOE requests information on the availability of equipment with variable defrost control and the control schemes employed in those models, if any are available. DOE requests comment on whether the approach granted to AHT in the May 2017 Interim Waiver may better measure the representative energy use of CRE over complete defrost cycles compared to the current 24-hour test period.

With regard to CRE models with multiple evaporators (and therefore, potentially multiple defrosts) connected to a single or multi-stage condensing unit, ASHRAE 72–2005 does not specify which evaporator should be used to determine the defrost cycle that initiates the test. Additionally, if the defrost cycles for multiple evaporators do not activate at the same time during the test, ASHRAE 72–2005 does not specify which defrost cycle should be used to determine the start of the 24-hour test period. ASHRAE 72–2005 also does not explicitly address the treatment of defrost cycles for multi-compartment CRE models (*i.e.,* hybrid CRE) with different evaporator temperatures and defrost sequences.

The DOE test procedure for consumer refrigeration products also addresses products with multiple evaporators and multiple defrosts. In that test procedure, the second (*i.e.,* defrost) part of the test period is conducted separately for each defrost occurrence. Section 4.2.4 of 10 CFR part 430 subpart B appendix A. Similar to the two-part test described

[11] ASHRAE 72–2005 and ASHRAE 72–2018 define steady state as the condition where the average temperature of all test simulators changes less than 0.4 °F from one 24-hour period or refrigeration cycle to the next.

earlier in this section, the energy use calculations weight each individual defrost test period with the steady-state test period using the known compressor runtime between each defrost type or based on a calculated average time between defrosts. Section 5.2.1.5 of 10 CFR part 430 subpart B appendix A.

*Issue 44:* DOE requests information regarding the types of defrost systems that exist in CRE available on the market and how manufacturers currently select test periods for models with multiple evaporators with non-synchronous defrost cycles. DOE requests comment on any potential modifications that could be made to the CRE test procedure in order to increase representativeness and provide additional detail for testing these units, including whether the two-part approach, as described earlier in this section, would be appropriate.

2. Total Display Area

Section 3.2 of Appendix B provides instructions regarding the measurement of TDA. That section specifies that TDA is the sum of the projected area(s) of visible product, expressed in $ft^2$ (*i.e.,* portions through which product can be viewed from an angle normal, or perpendicular, to the transparent area).

For certain CRE configurations, merchandise is not necessarily located at an angle directly normal, or perpendicular, to the transparent area despite the transparent area being intended for customer viewing. For example, for service over counter ice-cream freezers, the ice cream containers may be placed within the chest portion of the refrigerated case, with a glass display panel on the front and glass rear doors located above the merchandise storage area. If the glass display areas are nearly vertical, the ice cream containers may be positioned low enough in the case that they are not at a viewing angle perpendicular to the glass. However, during typical use, customers would stand close enough to the display glass that the ice cream would be visible from other angles not perpendicular to the glass. Accordingly, DOE is considering whether additional TDA instructions are necessary to capture the intended display function of this equipment.

*Issue 45:* DOE seeks feedback on whether the TDA definition and test instructions should account for display areas in which the merchandise is not at a location normal to the display surface. If so, DOE requests information on how to define the revised display area.

*Issue 46:* DOE also requests comment on other CRE applications or configurations for which the TDA, as currently defined, may not adequately represent the display functionality of the equipment.

*G. Alternative Refrigerants*

DOE's current test procedure for remote condensing CRE requires the estimation of compressor EER from Table 1 of AHRI 1200–2010. The EER ratings in the table are based on performance of reciprocating compressors and were developed based on refrigerants that historically have been commonly used for CRE (*i.e.,* R–404A).

Certain remote CRE installations can use carbon dioxide (''$CO_2$'') as the refrigerant; however, the existing remote CRE test procedure likely does not address the unique operation for these systems. For example, the current DOE test procedure requires an inlet refrigerant liquid temperature of 80 °F with a saturated liquid pressure corresponding to a condensing temperature of 89.6 °F to 120.2 80 °F. See ASHRAE 72–2005, sections 4.3.2 and 4.3.3. $CO_2$ has a critical point of 87.8 °F and 1,070 pounds per square inch (''psi''), above which it is a supercritical fluid. Accordingly, $CO_2$ cannot be a liquid at the specified condensing temperature conditions (*i.e.,* it would either be a gas or supercritical fluid, depending on pressure). Additionally, $CO_2$ systems typically include multiple stages of compression and cooling, resulting in liquid supplied to the refrigerant cases at conditions not necessarily defined by the typical condensing unit conditions. DOE has recently granted a Decision and Order to address similar $CO_2$ operating conditions for testing walk-in cooler and walk-in freezer unit coolers. 86 FR 14487 (March 19, 2021). That Decision and Order approach requires liquid inlet saturation temperature and liquid inlet subcooling of 38 °F and 5 °F, respectively. 86 FR 14487, 14489. The Decision and Order also maintains the existing compressor energy consumption determination based on an approach consistent with the CRE remote calculations using AHRI 1200–2010 (the walk-in requirements instead refer to the walk-ins rating standard, AHRI 1250–2009, which includes the same EER table as AHRI 1200–2020). *Id.*

*Issue 47:* DOE requests information on the typical conditions for remote CRE intended for use with $CO_2$ refrigerant. DOE requests comment and data on the applicability of the EER values in Table 1 of AHRI 1200–2010 to the typical compressor EERs for $CO_2$ refrigerant systems.

*Issue 48:* DOE also requests information and supporting data on whether the existing test procedure is appropriate for any other alternative refrigerants that may be used for remote CRE. DOE requests feedback on whether the operating conditions specified in ASHRAE 72–2005 or the standardized EER values in Table 1 of AHRI 1200–2010 should be revised to account for operation with any other alternative refrigerants. DOE also requests usage data regarding the range of refrigerants in the remote CRE market.

*H. Certification of Compartment Volume*

The current certification requirements specified in 10 CFR 429.42 require manufacturers to certify compartment volumes for certain equipment classes of CRE. DOE's current test procedure incorporates by reference AHAM HRF–1–2008 to measure compartment volume. DOE acknowledges that manufacturers often use computer aided designs (''CAD'') to in designing their equipment. Using the CAD as the basis for determining compartment volumes may be particularly helpful when the geometric designs of the CRE make physical measurements in accordance with AHAM HRF–1–2008 difficult. DOE is considering whether it should allow CRE manufacturers to certify compartment volumes using CAD drawings. Currently, DOE's certification requirements in 10 CFR part 429 include provisions for certifying volume for basic models of consumer refrigeration products, commercial gas-fired and oil-fired instantaneous water heaters, and hot water supply boilers using CAD drawings. 10 CFR 429.72(c), (d), and (e).

*Issue 49:* DOE requests comment on whether allowing manufacturers to certify compartment volumes for CRE basic models using CAD drawings would introduce any testing or certification issues. DOE also seeks information on the extent to which the use of CAD drawings may reduce manufacturer test burden.

*I. Test Procedure Waivers*

A person may seek a waiver from the test procedure requirements for a particular basic model of a type of covered equipment when the basic model for which the petition for waiver is submitted contains one or more design characteristics that: (1) Prevent testing according to the prescribed test procedure, or (2) cause the prescribed test procedures to evaluate the basic model in a manner so unrepresentative of its true energy consumption characteristics as to provide materially inaccurate comparative data. 10 CFR 431.401(a)(1).

DOE has granted test procedures waivers for the current CRE test procedure. On September 12, 2018, DOE published a test procedure for ITW Food Equipment Group, LLC (''ITW'') for testing specified grocery and general merchandise system (*i.e.,* refrigerated storage allowing for order storage and customer pickup) basic models which have unique operating characteristics including floating suction temperatures for individual compartments, different typical door-opening cycles, and a high-temperature ''ambient'' compartment. 83 FR 46148. As discussed in section II.E.1, DOE has granted AHT a test procedure waiver to allow for testing specified basic models that do not have defrost cycle capability when operated in freezer mode. 83 FR 54581. Additionally, also discussed in section II.E.1, DOE has granted AHT an interim test procedure waiver for testing certain models with defrost cycles longer than 24 hours. 82 FR 24330.

The test procedure waivers for these CRE basic models have addressed provisions in the test procedures that would evaluate subject basic models in a manner so unrepresentative of their true energy consumption characteristics as to provide materially inaccurate comparative data.

*Issue 50:* DOE requests feedback on whether the test procedure waiver approaches for the ITW and AHT petitions are generally appropriate for testing basic models with these features.

## III. Submission of Contents

DOE invites all interested parties to submit in writing by the date specified in the **DATES** heading, comments and information on matters addressed in this RFI and on other matters relevant to DOE's early assessment of whether an amended test procedure for CRE is warranted and if so, what such amendments should be.

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

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

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

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

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

Include contact information each time you submit comments, data, documents, and other information to DOE. No telefacsimiles (faxes) will be accepted.

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

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

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

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

DOE considers public participation to be a very important part of the process for developing test procedures and energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in each stage of this process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the process. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this process should contact Appliance and Equipment Standards Program staff at (202) 287–1445 or via email at *ApplianceStandardsQuestions@ee.doe.gov.*

## Signing Authority

This document of the Department of Energy was signed on June 4, 2021, by Kelly Speakes-Backman, Principal Deputy Assistant Secretary and Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE **Federal**

**Register** Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on June 7, 2021.

**Treena V. Garrett,**

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

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## DEPARTMENT OF TRANSPORTATION

## Federal Aviation Administration

## 14 CFR Part 39

**[Docket No. FAA–2021–0460; Project Identifier MCAI–2020–01620–R]**

**RIN 2120–AA64**

## Airworthiness Directives; Airbus Helicopters

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Notice of proposed rulemaking (NPRM).

**SUMMARY:** The FAA proposes to adopt a new airworthiness directive (AD) for certain Airbus Helicopters Model AS355E, AS355F, AS355F1, and AS355F2 helicopters. This proposed AD was prompted by multiple fatigue cracks in power turbine (PT) 3rd stage wheels. This proposed AD would require revising the existing Rotorcraft Flight Manual (RFM) for your helicopter and installing a placard. The FAA is proposing this AD to address the unsafe condition on these products.

**DATES:** The FAA must receive comments on this proposed AD by July 26, 2021.

**ADDRESSES:** You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* (202) 493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For Airbus Helicopters service information identified in this NPRM, contact Airbus Helicopters, 2701 North Forum Drive, Grand Prairie, TX 75052; telephone (972) 641–0000 or (800) 232–0323; fax (972) 641–3775; or at *https://www.airbus.com/helicopters/services/technical-support.html.* For Rolls-Royce service information identified in this NPRM, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, DE24 8BJ, United Kingdom; phone: +44 (0)1332 242424; fax: +44 (0)1332 249936; or at *https://www.rolls-royce.com/contact-us.aspx.* You may view this service information at the FAA, Office of the Regional Counsel, Southwest Region, 10101 Hillwood Pkwy., Room 6N–321, Fort Worth, TX 76177. For information on the availability of this material at the FAA, call (817) 222–5110.

### Examining the AD Docket

You may examine the AD docket at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2021–0460; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, the European Union Aviation Safety Agency (EASA) AD, any comments received, and other information. The street address for Docket Operations is listed above.

**FOR FURTHER INFORMATION CONTACT:** Michael Hughlett, Aerospace Engineer, General Aviation & Rotorcraft Section, International Validation Branch, FAA, 10101 Hillwood Pkwy., Fort Worth, TX 76177; telephone (817) 222–5110; email *michael.hughlett@faa.gov.*

**SUPPLEMENTARY INFORMATION:**

### Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under **ADDRESSES**. Include ''Docket No. FAA–2021–0460; Project Identifier MCAI–2020–01620–R'' at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to *https://www.regulations.gov,* including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this NPRM.

### Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as ''PROPIN.'' The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Michael Hughlett, Aerospace Engineer, General Aviation & Rotorcraft Section, International Validation Branch, FAA, 10101 Hillwood Pkwy., Fort Worth, TX 76177; telephone (817) 222–5110; email *michael.hughlett@faa.gov.* Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

### Background

EASA, which is the Technical Agent for the Member States of the European Union, has issued EASA AD 2020–0266, dated December 8, 2020 (EASA AD 2020–0266), to correct an unsafe condition for Airbus Helicopters (AH), formerly Eurocopter, Eurocopter France, Aerospatiale Model AS 355 E, AS 355 F, AS 355 F1, and AS 355 F2 helicopters, all serial numbers, if equipped with Rolls-Royce Corporation (formerly Allison) (RRC) engine Model 250–C20F. EASA advises of multiple fatigue cracks in PT 3rd stage wheels. Investigation has revealed that crack initiation at the hub trailing edge could occur in low-cycle fatigue and progress in high-cycle fatigue up to separation of the blade. According to EASA, RRC has determined that detrimental vibrations could occur within a particular range of turbine speeds, below the normal operating range of this helicopter, which are a potential contributing factor to these failures. This condition, if not addressed, could result in fatigue failure of a PT 3rd stage wheel, and subsequent loss of engine power, release of debris and damage to the helicopter, and loss of control of the helicopter.

Accordingly, EASA AD 2020–0266 requires revising the Normal Procedures