

Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
Natural Resources Defense Council

July 26, 2021

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

RE: Docket Number EERE–2017–BT–TP–0008/RIN 1904-AD83: Request for Information for Test Procedures for Commercial Refrigerators, Refrigerator-Freezers, and Freezers

Dear Dr. Johnson:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), and Natural Resources Defense Council (NRDC) on the request for information (RFI) for test procedures for commercial refrigerators, refrigerator-freezers, and freezers. 86 Fed. Reg. 31182 (June 11, 2021). We appreciate the opportunity to provide input to the Department.

We support changing the definition of “ice-cream freezer” to refer to equipment that is capable of achieving an integrated average temperature (IAT) of -15°F. As DOE explains in the RFI, the current definition of “ice-cream freezer” is based on design intent,¹ and the term “ice cream” is not specifically defined.² Furthermore, while ice-cream freezers are tested at an IAT of -15°F, some ice-cream freezers designed for certain applications are not capable of achieving such low temperatures and instead are currently tested at their lowest application product temperature (LAPT). DOE is requesting comment on whether the ice-cream freezer definition should only refer to equipment that is capable of achieving 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 operating at -15°F would instead be classified as freezers.³ We believe that such an approach makes sense as it would remove any ambiguity as to which equipment falls under the definition of “ice-cream freezer.” This change would also ensure that all equipment currently meeting the ice-cream freezer definition would be tested at a standardized temperature (either -15°F or 0°F).

We support establishing a new definition for “high-temperature refrigerator.” DOE explains in the RFI that there is equipment that meets the definition of “commercial refrigerator” but that is capable of operating only at temperatures above 38°F, which is the IAT at which commercial refrigerators are

¹ “Ice-cream freezer” is defined 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.

² 86 Fed. Reg. 31183-84.

³ 86 Fed. Reg. 31184.

tested.⁴ This equipment is currently tested at its LAPT. We support establishing a new definition for “high-temperature refrigerator” and separate test requirements for this equipment. Such a change will help ensure that the test procedure is representative for high-temperature refrigerators and is providing standardized ratings for this equipment.

We encourage DOE to develop a test procedure to verify pull-down performance. As DOE describes in the RFI, while the test procedure contains a definition for “pull-down temperature application,”⁵ there is no procedure to verify whether a unit meets the requirements in the definition.⁶ We believe that it makes sense to develop a test procedure to verify pull-down performance so that a manufacturer, DOE, or a third party can determine whether a particular unit meets the definition of “pull-down temperature application.”

We encourage DOE to develop test methods for additional equipment categories. In the RFI, DOE identifies four categories of commercial refrigeration equipment that are not currently subject to the DOE test procedure: salad bars, buffet tables, and refrigerated preparation tables; blast chillers and blast freezers; chef bases and griddle stands; and mobile refrigerated cabinets.⁷ We encourage DOE to work to develop test methods for each of these additional equipment categories. Establishing test procedures for these equipment types will ensure that purchasers have access to comparable efficiency information across models and will allow for the consideration of both DOE standards and ENERGY STAR specifications for this equipment.⁸ Preliminary EPA research found that available data on refrigerated preparation tables and work-top table commercial refrigeration equipment (which have similar designs to chef bases) indicate that there is significant variation in energy performance.⁹ Furthermore, because chef bases and griddle stands and blast chillers and freezers have oversized refrigeration systems compared to other commercial refrigeration equipment, these equipment types use more energy compared to other equipment with similar volumes.

In considering test procedures for these additional equipment categories, we encourage DOE to investigate representative test conditions, which may be different than those for other types of commercial refrigeration equipment. For chef bases and griddle standards and mobile refrigerated cabinets specifically, we encourage DOE to consider specifying elevated ambient temperatures. Because cooking equipment is installed on top of chef bases and griddle stands, chef bases and griddle stands will be exposed to higher temperatures than other commercial refrigeration equipment. Similarly, we understand that mobile refrigerated cabinets are often placed outdoors and are therefore also often exposed to higher temperatures than other commercial refrigeration equipment.

⁴ Ibid.

⁵ “Pull-down temperature application” is defined as “a commercial refrigerator with doors that, when fully loaded with 12 ounce beverage cans at 90 degrees F, can cool those beverages to an average stable temperature of 38 degrees F in 12 hours or less.” 10 CFR 431.62.

⁶ 86 Fed. Reg. 31188.

⁷ 86 Fed. Reg. 31185-89.

⁸ In the December 2020 ENERGY STAR Discussion Guide for Commercial Refrigerators and Freezers, EPA indicated that they are “exploring opportunities to expand scope to equipment categories with no currently applicable DOE energy conservation standards or DOE test procedures” and that “DOE would provide EPA with support in the development of the corresponding ENERGY STAR test procedures for these equipment categories”: <https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Commercial%20Refrigerators%20and%20Freezers%20V5.0%20Discussion%20Guide.pdf>.

⁹ Ibid.

We encourage DOE to consider an approach for treating dedicated remote condensing units that is similar to the approach for walk-in coolers and freezers. Refrigerated display cases can be paired in the field with a wide range of both dedicated remote condensing units and compressor rack systems. As DOE explains in the RFI, the current test procedure for remote condensing commercial refrigeration equipment thus measures the energy use of the components in the refrigerated case only and uses a calculated value for the compressor energy consumption (i.e., the energy use of the condensing unit that is ultimately paired with the refrigerated case is not measured).¹⁰ However, DOE notes that in some cases, specific dedicated remote condensing units are intended to be used with specific refrigerated cases, and the RFI requests comment on whether remote condensing equipment should be tested as a complete system in these cases.¹¹ DOE also notes that because a specific dedicated remote condensing unit is not always specified to be paired with a specific refrigerated case, “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.” The RFI therefore also requests comment on potential approaches to independently evaluate the performance of dedicated remote condensing units.

Since manufacturers often do not specify a specific dedicated remote condensing unit for use with a specific refrigerated case, we believe that it would be preferable to develop an approach to allow for independently measuring the performance of all dedicated remote condensing units, regardless of how they are sold. We also believe that if DOE instead pursued the alternative approach of testing complete systems only when a complete system is specified by the manufacturer, this could potentially create market distortions (e.g., a manufacturer of a display case who currently specifies a specific dedicated remote condensing unit may choose to discontinue that practice depending on the implications for their equipment).

Specifically, we recommend that DOE consider an approach similar to the approach for walk-in coolers and freezers. The test procedure for walk-in coolers and freezers allows for rating both a matched pair (unit cooler + dedicated remote condensing unit) and either a unit cooler or a dedicated remote condensing unit by itself (with assumptions for the performance of the other piece of equipment). This approach could be applied to commercial refrigeration equipment to allow for rating both a complete system (display case + dedicated remote condensing unit) and either a display case or a dedicated remote condensing unit by itself.

Thank you for considering these comments.

Sincerely,



Joanna Mauer
Technical Advocacy Manager
Appliance Standards Awareness Project



Christopher Perry, PE
Manager of Codes and Standards
American Council for an Energy-Efficient
Economy

¹⁰ 86 Fed. Reg. 31190.

¹¹ 86 Fed. Reg. 31191.

A handwritten signature in black ink, appearing to read "Joe Vukovich". The signature is fluid and cursive, with the first name "Joe" being particularly prominent.

Joe Vukovich
Energy Efficiency Advocate
Natural Resources Defense Council