

March 5th, 2021

Ms. Tanja Crk
US Environmental Protection Agency
Ariel Rios Building 6202J
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Ms. Crk:

The Consortium for Energy Efficiency (CEE) respectfully submits the following comments in response to ENERGY STAR® Version 5.0 Commercial Refrigerators and Freezers Discussion Guide, released by the Environmental Protection Agency (EPA) on December 22, 2020.

CEE is the binational organization of energy efficiency program administrators. Historically, the CEE Board of Directors determined to build a single brand for efficiency and elected to create standing for the ENERGY STAR® Program rather than advancing the name recognition of CEE or other endeavors that existed at that time. The ENERGY STAR® Program adopted specifications supported by CEE and program administrators, providing the confidence that utility ratepayer programs needed to invest in incentives in association with ENERGY STAR®. This was a conscious investment and contribution of equity and the sanctioned obligations of utility members that include responsibility for delivering safe, reliable, and affordable service. Today, the staff and membership of the Consortium continue to perform diligence relative to the ENERGY STAR brand promise and associated performance specifications, given the very serious obligations entrusted to US and Canadian utilities as well as others sanctioned with advancement of voluntary market transformation efforts.

CEE members are responsible for ratepayer-funded efficiency programs in 38 US states, the District of Columbia, and four Canadian provinces. In 2018, CEE members directed approximately 68% percent of the \$8.9 billion in energy efficiency and demand response program expenditures in the two countries. These comments are offered in support of the local activities CEE members carry out to actively leverage the ENERGY STAR brand. CEE

consensus comments are offered in the spirit of strengthening ENERGY STAR, so it may continue to serve as the national marketing platform for energy efficiency.

CEE highly values the role ENERGY STAR plays in differentiating energy efficient products and services that the CEE membership supports locally throughout the US and Canada. We appreciate the opportunity to provide these comments.

CEE Supports EPA Efforts to Revise Criteria to Continue to Identify Top Performing Products

ENERGY STAR and CEE specifications have consistently defined what constitutes highly efficient closed door self-contained refrigerators and freezers since 2001 and 2003 respectively. In 2006, CEE instituted the *CEESM Commercial Kitchens Initiative* to advance the efficiency of cooking, refrigeration, and sanitation equipment, incorporating the CEE high efficiency specifications for commercial refrigerators and freezers. Over the years, member programs, ENERGY STAR, and federal minimum standards have worked in concert to advance the market for high efficiency commercial refrigerators and freezers. As a result of our success, the margin of energy savings above federal minimum standards and CEE tier levels has diminished over time and there has been increasing alignment between CEE and ENERGY STAR specifications. Ahead of the implementation of the ENERGY STAR Version 4 Specification, CEE did not see an opportunity to further differentiate the market through a tier 2. Considering these developments, ENERGY STAR's continued support of high efficiency refrigerators and freezers, and Consortium support for ENERGY STAR commercial kitchen products, CEE suspended its specification for commercial refrigerators and freezers as of March 27, 2017 to focus on other opportunities to advance energy savings in commercial foodservice and to support the goals of the Initiative. Such opportunities include supporting efficiency in new commercial kitchens refrigeration equipment categories (not covered by CEE or ENERGY STAR) such as remote condensing (RC) units and open display cases. The CEE Commercial Kitchens Committee has assessed commercial refrigeration efficiency opportunities and identified remote-condensing units and open display cases as near term priorities for energy savings based on:

- Existing standards and voluntary specifications
- Test methods and performance data sources
- Product availability (potential for market differentiation)
- Market share – estimated shipments
- Energy savings potential

In 2019, approximately 40 CEE members offered program support for equipment covered by the current ENERGY STAR Commercial Refrigerator and Freezer Version 4.0 specification. Most of these members used ENERGY STAR as a basis for qualifying equipment. The most recent ENERGY STAR Unit Shipment Summary Report indicates that 46% of all units shipped in the United States in 2019 are certified to the current specification. We agree with EPA that this is a high level of overall ENERGY STAR market share and support EPA efforts to revise the specification performance criteria for existing categories to recognize approximately the top twenty-five percent of the market and continue to deliver meaningful energy savings over conventional models.

CEE Supports EPA Consideration of Expanding the Scope to the Identified Categories

The current ENERGY STAR specification covers eight out of the 49 commercial refrigeration equipment classes regulated under the US Department of Energy (DOE) Federal energy conservation standard. EPA reports that the eight equipment classes represent 8,179 of 20,543 models (40%) in the DOE's Compliance Certification Database. EPA is considering expanding the ENERGY STAR scope to a subset of the remaining 60% of CRE models in the Version 5 specification, specifically the four additional categories:

- Vertical, closed, transparent door, remote-condensing refrigerators (VCT.RC.M) and freezers (VCT.RC.L),
- Service-over-counter, remote-condensing refrigerators (SOC.RC.M) and
- Service-over-counter, self-contained refrigerators (SOC.SC.M)

CEE agrees that the current ENERGY STAR scope leaves out a significant share of the market for equipment covered by the federal standard. This includes an estimated 4,464 thousand linear feet (39 percent) of total shipments and 2,021.43 GWh (41 percent) of annual energy consumption. The categories listed above represent 1048 thousand linear feet (14 percent) of shipments and 1,342.97 GWh (26 percent) of annual energy consumption.¹ These categories represent significant market share and energy consumption, and therefore a significant opportunity for expanding the scope of the ENERGY STAR specification to support end users and efficiency programs in realizing energy savings.

¹ This analysis is based on data provided in the technical support document for the 2017 federal standard. U.S. Department of Energy. (2014) *Technical Supporting Document: Energy Efficiency Program for Consumer Products and Commercial and Industrial Equipment – Commercial Refrigeration Equipment*. Washington, D.C. Table 9.6 “Projected Shipments for Commercial Refrigeration Equipment, 2017–2046”, and Table 10.2.4 “Average Annual Unit Energy Consumption by Efficiency Levels (kWh/linear foot/year)”

EPA is also considering expanding the scope to three equipment categories not covered by a federal standard:

- refrigerated preparation and buffet tables
- chef bases/griddle stands, and
- blast chillers

CEE supports EPA investigating opportunities to expand the scope to include these equipment types. CEE comments on individual categories are provided below.

Validate the Energy Use Impact of Improved Display Case Efficiency on Remote Condensing Systems

EPA is considering expanding the scope to three categories of refrigerated cases that are designed to be connected to separate remote condensing units (RC models). On page 2 of the discussion guide, EPA states:

- While RC models can be connected to a range of remote condensing units (e.g., dedicated remote condensing units matched to the individual case or complex multi-compressor racks supplying refrigerant to multiple refrigerated cases), DOE's test procedure assesses the energy use and thermal performance of the refrigerated case itself, independent of the remote condensing unit. The tested thermal performance of the case is then used to determine a representative energy use for a remote condensing unit supplying the necessary refrigeration. Thus, replacing a RC model with a more efficient model would reduce either energy consumption of the case itself or the refrigeration load on the remote condensing unit (regardless of remote condensing unit type), or both.

For the three categories of RC equipment that EPA is considering, EPA is proposing to include in scope only models that are attached to dedicated remote condensing units. CEE supports this approach as it is more likely to enable credible statements regarding expected savings from ENERGY STAR qualified models, which is important for the integrity of the ENERGY STAR brand, and for the programs promoting ENERGY STAR. As the test procedure assesses the energy use of and thermal performance of the refrigerated case, it follows that replacing an RC display case model with a more efficient model would reduce the energy consumption of the case itself. It is logical that a more thermally efficient display case would reduce the refrigeration load on the remote condensing unit (regardless of remote condensing unit type). Given that display cases are often replaced separately from the remote condensing unit, or purchased from different manufacturers (not sold as a matched system) the energy impact of improved display case efficiency on remote condensing systems should be validated. We recommend that EPA validate this assumption through field study or laboratory testing. A potential study to validate this would involve:

1. Test two baseline refrigerated cases with two independent single remote compressors
2. Test two baseline refrigerated cases with a single rack system
3. Test two efficient refrigerated cases with two independent single remote compressors
4. Test two efficient refrigerated cases with a single rack system
5. Compare whole system (case and condenser) percentage savings between 1 and 3 and 2 and 4

Ideally this would be conducted in a laboratory, but a field study could potentially validate similar savings.

Because there are several refrigerant options available in the market, we recommend that EPA also evaluate the impact of refrigerant type on expected energy savings from replacing an RC display case model with a more efficient model. Specifically, EPA would determine whether efficiency improvements in the display case result in different levels of RC unit system savings depending on the refrigerant type. In other words, we suggest EPA validate whether the reduction in remote condensing unit energy consumption that results from reduced refrigerant load is consistent across refrigerant types.

Assess the Applicability of the ASHRAE 72 Door Opening Requirements to SOC Equipment

We support EPA investigating opportunities to expand the scope to include SOC equipment. We recommend that EPA assess the applicability of the door opening requirements in ASHRAE 72 *Method of Testing Open and Closed Commercial Refrigerators and Freezers* to SOC equipment. The current door opening methodology of ASHRAE 72 is that “each door, drawer or door and drawer shall be in the fully open position for six seconds, six times per hour, at ten-minute intervals for eight consecutive hours.” This methodology was developed for standard reach in refrigerators and freezers and may not be representative of the typical usage of SOC refrigeration. We recommend EPA consult relevant end users, for example grocery store operators, to see if this door opening and product loading methodology is applicable to SOC refrigerators.

Prioritize Chef Bases/Griddle Stands, Then Prep Tables with Refrigerated Storage Underneath

CEE supports EPA consideration of expanding the scope to include the identified equipment categories that are not covered by a federal standard. Griddle stands and chef bases should be addressed first.

The upper wells of refrigerated buffet/preparation (prep) tables come in a variety of configurations, making it challenging to develop a standard for characterizing and rating

their performance. EPA should first focus on prep tables with storage underneath. Prep tables can be classified into two categories: units with integrated storage underneath running off the same compressor and units where the refrigerated rail is separate from the bottom storage or is on two separate compressors. The current ASTM F2143 focuses on units with integrated storage underneath running off the same compressor. That is the most common category and one that ENERGY STAR should first focus on. Different methodologies may be necessary for stand-alone refrigerated rails and refrigerated prep tables where the rail and the bottom compartment are on separate compressors (these systems are designed to have the rail turned off at night).

We Appreciate the Caution Regarding Including Open Refrigerated Display Cases, But Data Suggests Energy Savings Potential and a Need for a North American specification

EPA did not include open refrigerated display cases ENERGY STAR V.4 Commercial Refrigerators and Freezers Specification because they inherently use more energy than closed case. EPA is not proposing the addition of this equipment category in the v5.0 revision. EPA is interested in highlighting energy savings options to consider as best practices that ENERGY STAR envisions sharing with CRE purchasers and users. We appreciate EPA's caution towards including open display cases in the ENERGY STAR Specification and support its strategy of highlighting energy saving best practices including alternative display case options. However, many CEE members offer program support for the types of add-on measures highlighted in the discussion guide due to the energy savings that is realized. In 2019, member program offers for such measures included 29 for retrofitting cases with doors, 29 for door gaskets, 31 for night covers, and 49 for strip curtains. A list of such program offerings by member is included in the 2019 CEE Kitchens Program Summary that will be available on the CEE Forum member-only website soon, which EPA ENERGY STAR staff may access. One caution with night covers is that energy savings are dependent on their use once installed, which can be inconsistent due to changes in business operations (e.g., stocking practices) or lapses in employee performance.

As EPA notes in the discussion guide, open cases represent approximately 15 to 20% of all CRE models shipped based on the linear feet of shipments provided in the Technical Support Document supporting DOE's 2014 final rule that established the current energy conservation standards for CRE. Our members report that many business owners are convinced that open displays increase sales, and therefore will continue to specify this

product type. Given the substantial market share, and expected persistence of business owners' preference for open cases in certain applications and settings, CEE is considering developing a specification for this product category should EPA determine not to move forward. If EPA cannot identify viable market alternatives for Open Display cases that will compel purchasers to select a more efficient configuration, excluding this category risks leaving savings on the table. A binationally consistent CEE specification within a broader market strategy can address how program administrators can work with trade allies to ensure business owners understand the energy implications of their display case options and support selection of a relatively efficient option if they choose open display cases.

CEE would once again like to thank the EPA for the opportunity to comment in response to the ENERGY STAR® Version 5.0 Commercial Refrigerators and Freezers Discussion Guide. Please contact CEE Program Manager Bjorn Jensen at 617-337-9280 with any questions about these comments.

Sincerely,



Ed Wisniewski
Executive Director