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September 22, 2021

Ms. Tanja Crk
U.S. Environmental Protection Agency
Climate Protection Partnerships Division
1200 Pennsylvania Ave, NW
Washington DC 20460

Topic: ENERGY STAR® Version 5.0 Commercial Refrigerators and Freezers Draft 1 Specification

Dear Ms. Crk:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the United States (U.S.) Environmental Protection Agency (EPA) ENERGY STAR® Version 5.0 Commercial Refrigerators and Freezers Draft 1 Specification.

The signatories of this letter, collectively referred to herein as the California Investor-Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western U.S., serving over 32 million customers. As energy companies, we understand the potential of appliance efficiency standards to cut costs and reduce consumption while maintaining or increasing consumer utility of products. We have a responsibility to our customers to advocate for standards that accurately reflect the climate and conditions of our respective service areas, so as to maximize these positive effects.

We commend EPA for revisiting the voluntary requirements for Commercial Refrigerators and Freezers, which were last updated in the Version 4.0 Specification, finalized in September 2016. We appreciate EPA's efforts to refine specification level and expand product scope for Version 5.0 and offer the following comments in support of EPA's development of this Draft 1 specification.

- 1. We commend ENERGY STAR's investigation of new specification levels for product categories included in the Version 4.0 specification and support ENERGY STAR's inclusion of Chef Base Refrigerators and Freezers and Service Over Counter Self-Contained Refrigerators equipment in the Version 5.0 Draft 1 specification.**

Vertical Closed Solid Self-Contained Refrigerators and Freezers

We support ENERGY STAR's selection of vertical closed solid, self-contained refrigerators (VCS.SC.M) and freezers (VCS.SC.L) as the product categories most ready for updated specification levels. VCS.SC.M and VCS.SC.L represent the largest market opportunity for additional energy savings (with 35.6 percent of VCS.SC.M and 39.6 percent of VCS.SC.L basic models currently eligible under the Version 4.0 specification¹). Our analysis of the ENERGY

¹ CA IOUs analysis of ENERGY STAR's August 11, 2021, Data Pack. Using "5. VCS.SC.M DOE Data" tab and "7. VCS.SC.L DOE Data" tab, we calculated number of products meeting ENERGY STAR's version 4.0 Specification levels (Link: <https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Version%205.0%20Commercial%20Refrigerators%20and%20Freezers%20Draft%201%20Data%20Pack.xlsx>).

STAR Version 4.0 product categories with no proposed changes in the Draft 1 specification demonstrated either a spread of product efficiencies that still aligns with ENERGY STAR’s program goals or, in the case of Horizontal Closed Transparent Refrigerators, low product category market share (see Table 1 and corresponding footnote).

	Vertical Closed Transparent	Horizontal Closed Transparent	Horizontal Closed Solid
Percentage of ENERGY STAR®-eligible models	25.3%	10.8%	21.4%
Percentage of ENERGY STAR®-eligible refrigerators	25.1%	45.0% ²	20.6%
Percentage of ENERGY STAR®-eligible freezers	26.0%	0.0%	22.8%

Table 1: Market share of ENERGY STAR eligible models for product categories with no change in proposed specification.

Source: CA IOU analysis of California Energy Commission MAEDbS dataset, August 2021.

Chef Bases and Griddle Stands

We applaud ENERGY STAR for including chef base refrigerators (CB.SC.M) and chef base freezers (CB.SC.L) as new product categories under the Version 5.0 Draft 1 Specification. Our analysis of publicly available data sources suggests that the CB.SC.M and CB.SC.L levels may not meet ENERGY STAR’s program goal of representing 25 percent of equipment on the market with the highest energy efficiency performance. A 2016 study by SCE demonstrated significant variation in energy consumption among six different products in the CB.SC.M category, representing a sizeable energy savings opportunity.³ However, those six models tested by SCE stood out significantly from the rest of the data used to generate the specification. EPA has indicated that the specification level was determined through a combined analysis of data from chef bases, refrigerated worktops, and undercounter refrigerators, but both refrigerated worktops and undercounter refrigerators generally use less energy per volume than chef bases, as EPA has acknowledged in the performance data.⁴ After filtering the California Energy Commission’s Modernized Appliance Efficiency Database System (MAEDbS) data for chef bases only, we found only one chef base model would qualify under the current proposed standard (see Figure 1 below).

² Note that Horizontal Closed Transparent Self-Contained Refrigerators were estimated in the 2014 TSD to constitute only 0.1% of linear feet shipped.

³ https://www.caetrm.com/media/reference-documents/ET15SCE1010_Chef_Bases_Report_final2.pdf, 2016

⁴ ENERGY STAR © Program Requirements Product Specification for Commercial Refrigerators and Freezers – Eligibility Criteria Draft 1, Version 5.0, Line 134.

<https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Version%205.0%20Commercial%20Refrigerators%20and%20Freezers%20Draft%201%20Specification.pdf>.

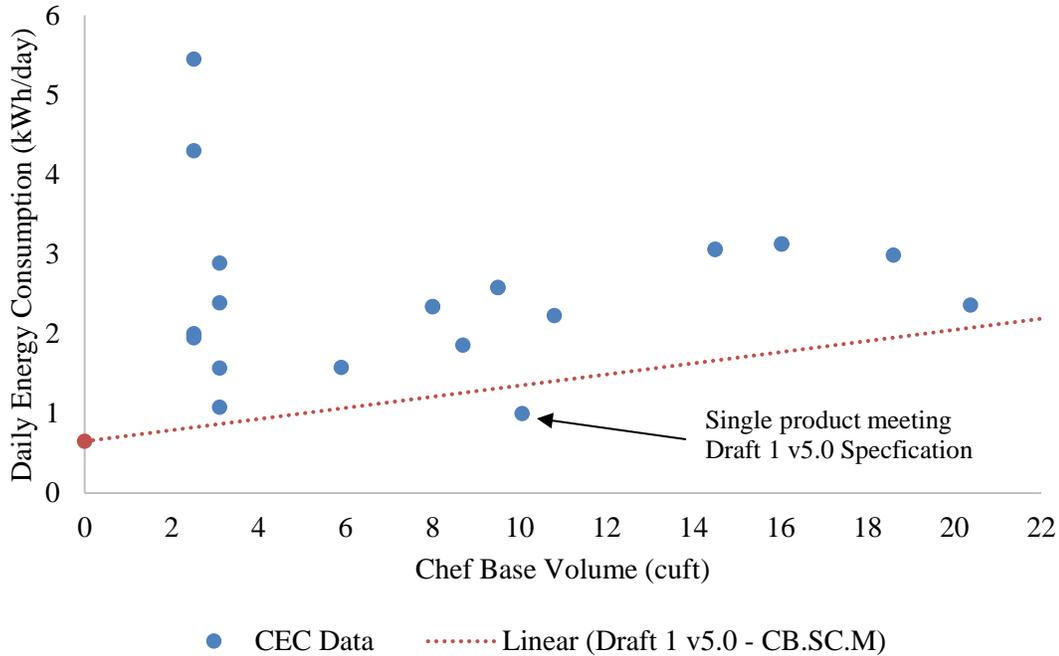


Figure 1: Daily Energy Consumption (DEC) and refrigerated volume⁵ of chef base refrigerators (CB.SC.M) from various sources.

Source: CA IOU analysis, August 2021, of 2016 SCE workpaper dataset,⁶ California Energy Commission MAEDbS dataset August 2021 for undercounter, worktop and other refrigeration, filtered for chef base units.

While the MAEDbS does not provide a full view of the market for both CB.SC.M or CB.SC.L, we nonetheless suggest an additional review of the specification levels to ensure the final specification accomplishes ENERGY STAR’s product representation goals for both product categories.

We also recommend clearly defining what constitutes a chef base, to ensure that all analyzed equipment is comparable and to avoid misclassification of other categories like undercounter refrigerators and worktops. Factors to consider for the definition of a chef base might be insulation level and/or weight holding capacity, since chef bases must be able to support the weight and heat of typical restaurant cooking equipment (e.g., griddles and broilers), which is typically above 700 pounds (lbs) and 350°F to 600°F, respectively.⁷ Meeting these performance requirements demand additional reinforcement and heat shielding of chef bases compared to worktop refrigerators and freezers.

Further, we suggest further clarification about the methodology for determining the internal volume of chef bases, which is not clearly defined in the most current ASHRAE Standard 72 (2018). The volume of the refrigerated space within chef bases can be interpreted in two ways: usable volume and total volume, including both usable and non-usable volume. The distribution of usable and non-usable volume is based on drawer placement. The interpretation of refrigerated volume can have a sizeable impact on the energy consumption criteria. As such, we recommend

⁵ Refrigerated Volume as defined under ASHRAE Standard 72 does not include a correction for non-usable volume.

⁶ https://www.caetrm.com/media/reference-documents/ET15SCE1010_Chef_Bases_Report_final2.pdf, 2016

⁷ Typical cooking equipment weight load: <https://www.webstaurantstore.com/guide/672/undercounter-refrigeration-buying-guide.html>, Weight Limits. For typical cooking equipment temperatures, see https://www.caetrm.com/media/reference-documents/Turbocoil_RB-72_60_R404_Chef_Base.pdf, p. 5, Holding Energy Rate.

normalizing energy use based on usable volume to ensure that units with large volumes of non-useable refrigerated space do not have more lenient energy criteria compared to more space-efficient designs that offer the same functionality to the customer. Figure 2 below highlights such areas of significant non-useable volume within existing product diagrams.

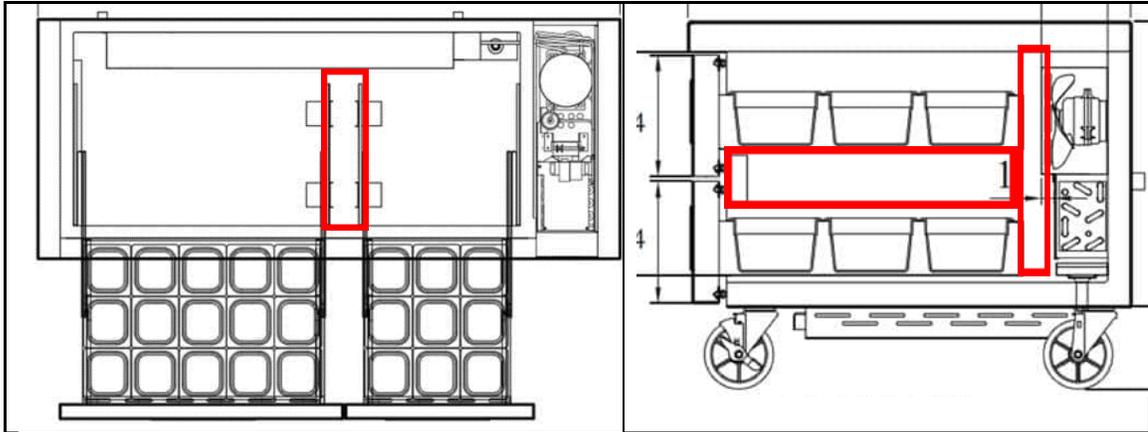


Figure 2: Top-down and side view of chef bases currently on the market with non-useable volume highlighted in red.

Source: Chef Base Specification Sheet⁸ with modifications by the CA IOUs.

Service Over Counter Self-Contained Refrigerators

We strongly support EPA’s efforts to develop specifications for Service Over Counter Self-Contained Refrigerators (SOC.SC.M). We recommend EPA update the Version 5.0 Draft 1 Specification language for SOC.SC.M to match the equation shown on the “14. SOC.SC.M Chart” tab of the Draft 1 Data Pack,⁹ which lists the specification level for units above 40 ft² TDA to be determined by the equation $0.4667 \text{ TDA} + 1.333$ (emphasis added in highlight). In contrast, the equation in the text of the specification for these units is listed as $0.4667 \text{ TDA} - 1.333$ (emphasis added in highlight).

- 2. We applaud ENERGY STAR’s efforts to address refrigerants as a critical component of commercial refrigeration equipment and support the proposal to require reporting of refrigerant type in the Version 5.0 Specification.**

We support EPA’s proposal to require reporting of refrigerant type in the Version 5.0 Specification and suggest expanding the proposed refrigeration reporting requirement to also encompass refrigerant charge quantity for self-contained units. Refrigerant charge information is readily available in equipment specification sheets and reporting should require limited additional burden. This refrigerant charge data would be a valuable resource for EPA as they move ahead with refrigerant transitions.

We recommend ENERGY STAR align with the existing EPA Significant New Alternatives Program (SNAP) rules by explicitly removing from the ENERGY STAR program and database models that are no longer compliant with SNAP requirements. Both R-134a and R-404a were

⁸ Example of chef base non-useable volume: <https://www.ckitchen.com/p/turbo-air-tcbe-72sdr-n-super-deluxe-chef-base.html>

⁹ <https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Version%205.0%20Commercial%20Refrigerators%20and%20Freezers%20Draft%201%20Data%20Pack.xlsx>

phased out in 2020 in accordance with EPA SNAP rules,¹⁰ but a small number of R-134a models on the ENERGY STAR Version 4.0 list could still meet the Version 5.0 requirements. Removing the models with non-compliant refrigerants would create a cohesive narrative for consumers and stakeholders.

In conclusion, we would like to reiterate our support for EPA's ENERGY STAR Version 5.0 Commercial Refrigerators and Freezers Draft 1 Specification. We thank EPA for the opportunity to be involved in this process.

Sincerely,



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¹⁰ <https://www.epa.gov/snap/substitutes-stand-alone-equipment>