

To: Mr. Ryan Fogle
U.S. Environmental Protection Agency
Climate Protection Partnership Division
1200 Pennsylvania Avenue NW
Washington, DC 20460

From: Richard Boehler
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Subject: Energy Solutions Comments on ENERGY STAR® Lab Grade Refrigerators & Freezers Standard V2.0, Draft 1

Dear Mr. Fogle,

The following comments are submitted on behalf of Energy Solutions. Energy Solutions is a mission-led, employee-owned clean energy implementation firm committed to building long-lasting, trusted relationships with our clients. For 25 years our cost-effective solutions in energy efficiency, demand management, distributed energy resources, and codes and standards have delivered significant and reliable results for our utility, program administrator, government, and institutional customers.

Energy Solutions designs and implements energy-efficient programs nationwide and pioneered models that move utility incentives for high-efficiency equipment up the supply chain to manufacturers (upstream) and distributors (midstream). Energy Solutions launched the first commercial upstream program in the nation with Pacific Gas and Electric Company (PG&E) in 1998. Since then, Energy Solutions has designed and implemented successful programs for lighting, HVAC, refrigeration, foodservice, and water heating in the residential, commercial, and industrial sectors in more than 20 states. In 2020, Energy Solutions designed and launched the first midstream incentive program for laboratory cold storage equipment. These measures were based on ENERGY STAR® specifications for high-performance laboratory grade refrigerators and freezers, and ultra-low temperature (ULT) freezers. In many cases, program incentives enable researchers to purchase high-efficiency, ENERGY STAR lab equipment rather than standard efficiency equipment. To date, Energy Solutions has issued over \$7 million in incentives on the sale of 5,100 ENERGY STAR certified laboratory cold storage equipment, representing nearly 20 million kWh in energy savings to consumers.

Thank you for the opportunity to submit comments to the Environmental Protection Agency (EPA) on the ENERGY STAR Lab Grade Refrigerators and Freezers specification V2.0, draft 1. We offer the following comments.

Energy Solutions supports updating the ENERGY STAR specification with recommendations to maintain consumer benefit and minimize market disruption.

Energy Solutions supports updating the ENERGY STAR Laboratory Grade Refrigerator and Freezer specification. There have been significant advances in product performance since the 2017 launch of the Version 1.1 specification. An update is needed to account for advances in lab cold storage markets and technologies, a growing list of ENERGY STAR qualified products, and a growing number of ENERGY STAR manufacturer partners. The ENERGY STAR program plays an important and unique role in differentiating lab grade refrigerators, lab grade freezers and ULT freezers by energy performance, helping consumers identify equipment with lower annual operating costs and environmental benefits.

Over time, both suppliers and consumers have embraced ENERGY STAR certified lab freezers and refrigerators, driving higher lab equipment efficiency and greater availability of efficient equipment. As a result, there are many products performing better than the V1.1 specification levels, particularly in the high performance and ultra-low categories. Utility rebate programs have helped grow participation in the ENERGY STAR program, spurred by significant public and private investments in COVID vaccine storage. For instance, Energy Solutions currently implements 16 midstream incentive programs in 12 states that offer customers point-of-sale rebates when purchasing ENERGY STAR certified ULT freezers, high performance lab refrigerators, and high-performance lab freezers.

While Energy Solutions supports the direction of the proposed specification update, we do not want the ENERGY STAR brand to lose the traction gained over the past 6 years. We recommend that EPA revisit the specification levels proposed to ensure a more comprehensive list of products across brands, application-specific features, and sizes.

We have concerns that the proposed levels in Version 2.0, draft 1 will have dramatic impacts on the market, which may result in higher energy consumption, rather than energy savings, for consumers. For example, in Version 2.0, ENERGY STAR has proposed a ULT freezer maximum daily energy consumption (MDEC) specification (.35 kwh/day/ft³) which is a 36 percent reduction compared to the current ULT freezer specification found in Version 1.1 (.55 kwh/day/ ft³). This jump in stringency would result in a severe drop in available ENERGY STAR models. According to EPA:

- The number of ENERGY STAR ULT freezers would drop from 101 unique models to 26 models.
- The number of ENERGY STAR certified lab freezers would drop from 50 unique models to 11 models.
- The number of ENERGY STAR certified lab refrigerators would drop from 105 unique models to 29 models.

Adopting specification levels that reduce the number of ENERGY STAR certified lab cold storage products by 75 percent is unusual compared to other ENERGY STAR specification revisions. For instance, recent revisions to ENERGY STAR requirements for commercial refrigerators, freezers and refrigerator-freezers reduced ENERGY STAR certified models by 44 percent on average across sizes and types of covered equipment. Our concern is that

consumers will turn to non-ENERGY STAR lab cold storage products because of this severe reduction in ENERGY STAR models.

ULT freezers are most often installed in specialty applications with limitations on space, size, and specific functionality requirements. With a significant reduction in ENERGY STAR models, consumers may choose non-ENERGY STAR products that meet their functionality requirements. A similar challenge may be faced in choosing lab refrigerators and freezers; the stringency of the proposed MDEC equations and the proposed setpoint definitions appear to unnecessarily sacrifice energy savings generated by efficient specialty products that must continue to be used in the field, such as blood bank refrigerators. As discussed below, the proposed setpoint temperature range for lab refrigerators of 2°C to 8°C would result in blood bank refrigerators falling outside of specs.

Large institutional customers, such as hospitals, universities, and large biotech/biopharma companies often rely on ENERGY STAR certified products to help meet their sustainability goals and will need greater availability of ENERGY STAR lab cold storage equipment to meet those goals. Additionally, because these products are primarily used in business or research applications the procurer of the products may have a set budget and be limited by the first cost of a product; the operational savings on utility bills are rarely being realized by the person making the purchasing decision. This split incentive coupled with limited product availability could jeopardize the continued growth in ENERGY STAR popularity for this product category.

A slightly more modest increase in stringency could help ensure continued success of the ENERGY STAR brand in this market. For instance, a ULT freezer maximum daily energy consumption specification of 0.45 kWh/day/ft³ would eliminate 27 percent of the most energy intensive ULT freezers on the ENERGY STAR qualified products list and reduce the average power consumption by 7 percent, while maintaining a more reasonably populated qualified products list of 85 unique ULT freezer models.

Energy Solutions supports alignment with relevant lab equipment industry standards and recommends EPA review of additional standards

Energy Solutions supports the alignment of ENERGY STAR criteria with accepted-industry standards and definitions, such as ANSI/NSF Standard 456-2021a, to help ensure consistency and clarity of communication with consumers and manufacturing partners. One issue for clarification is that industry uses the term “setpoint” to denote the actual temperature to be achieved and maintained within an operating temperature range. In seeking to align with the ANSI/NSF standard, EPA’s V2.0 Draft 1 refers to the full temperature range as setpoint temperature, which can potentially confuse the market. In addition, EPA has proposed revising its setpoint range for lab grade refrigerators from between 0°C and 12°C to between 2°C and 8° C. According to industry stakeholders, adopting the proposed lab refrigerator setpoint ranges may exclude specialty lab refrigeration equipment included in Version 1.1, such as blood bank refrigerators, and may represent a lost opportunity for consumers who are looking for ENERGY STAR blood bank refrigerators. We also recommend that EPA consider a broader set of lab equipment standards when developing criteria for ENERGY STAR Lab Grade Refrigerators and Freezers specification V2.0, draft 1. For instance, the US Food and Drug

Administration requires red blood cells to be placed in storage at a temperature between 1° and 6°C immediately after the plasma is separated.¹

Energy Solutions recommends EPA review additional sources of product data for this specification development.

EPA used the dataset associated with products certified to the current Version 1.1 specification as the basis for evaluating levels for Version 2.0; while this data is high quality, it is not a complete representation of the market. Utility program administrators are required to identify baseline energy performance for specific measures in their programs. As noted above, Energy Solutions implements a growing number of utility energy efficiency programs that include incentives for ENERGY STAR certified laboratory grade refrigerators, freezers and ULT freezers. State technical reference manuals (TRMs) contain measure descriptions, baseline efficiencies, compliance efficiency levels, and other supporting information on ENERGY STAR laboratory grade refrigerators and freezers. A list of state TRMs that address laboratory grade refrigerators and freezers and ULT freezers is provided in Table 1, below.

Table 1: State Technical Reference Manuals that Address Lab Cold Storage Equipment

State	Measure Name	Measure ID	Measure Description
CA	Ultra-Low Temperature Freezer ²	SWCR017	Ultra-low temperature (ULT) freezers are primarily used in labs at universities, biotech companies, biopharmaceutical companies, hospitals, and medical testing centers to store samples at temperatures between -70 °C and -80 °C (-94 °F and -112 °F).
NY	Refrigerators and Freezers and ULT Freezers ³	459	This measure also covers the installation of ENERGY STAR laboratory grade refrigerators and freezers. Eligible equipment include general purpose and high-performance laboratory grade refrigerators and freezers and ULT freezers.
MA	Refrigeration - Lab-Grade Cold Storage ⁴	COM-R-LGCS	This measure covers the installation of laboratory grade refrigerators and freezers as well as ULT freezers.

¹ <https://www.ecfr.gov/current/title-21/chapter-I/subchapter-F/part-640/subpart-D>

² <https://www.caetrm.com/measure/SWCR017/02/>

³ [https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/72c23decff52920a85257f1100671bdd/\\$FILE/NYS%20TRM%20V9.pdf](https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/72c23decff52920a85257f1100671bdd/$FILE/NYS%20TRM%20V9.pdf)

⁴ <https://etrm.anbetrack.com/#/workarea/home?token=6d6c45766e692f527044;>
<https://etrm.anbetrack.com/#/workarea/trm/MADPU/COM-R-LGCS/2022-2024%20Three-Year%20Plan%20TRM/version/5>

State	Measure Name	Measure ID	Measure Description
NH	Ultra Low-Temp Freezer ⁵	COM-FS-ULTF	Installation of an ENERGY STAR qualified ULT freezer to replace a standard-efficiency ULT freezer with a standard-efficiency dual-cascade refrigeration system.

The Massachusetts TRM references a study conducted by Eversource that specifically addresses baseline energy performance of ULT freezers. A redacted version of the Eversource baseline study (conducted by DMI Inc.) is attached. Both the California and the Massachusetts TRMs indicate a baseline energy performance for ULT freezers that is well above the .55 kWh/day/ft³ maximum daily energy consumption level that EPA used in its analysis. Energy Solutions recommends that EPA include state TRMs, the Eversource baseline study, and other market data in their analysis.

Energy Solutions supports adding new product categories where appropriate.

In addition to becoming larger and more efficient over time, the lab refrigerator and freezer industry has evolved in terms of model size and configuration. For instance, Version 1.1 was designed for larger ULT freezers (greater than 15 ft³) since smaller sizes were not available in the market. Today, there is a robust market for undercounter ULT freezers in the 3-10 ft³ size range. Energy Solutions commends EPA for recognizing this emerging market and inviting manufacturers to provide energy test data for smaller ULT freezers with the aim of creating a new ENERGY STAR ULT freezer size category. There are other lab freezer and refrigerator equipment categories that could potentially be added to the scope of this specification, such as combination refrigerator/freezer units and cryogenic freezers. Splitting lab grade freezers into sub-categories by temperature would also provide more precise criteria, allowing “apples-to-apples” comparisons.

Energy Solutions recommends further data collection, analysis, and stakeholder review by EPA before releasing a final Version 2.0.

EPA has set an aggressive schedule to update, finalize, and release revised ENERGY STAR criteria for Lab Grade Refrigerators and Freezers. As planned, the final specification would be released in the first quarter of 2024. Energy Solutions recommends finalizing Version 2.0 after further data collection, analysis, and stakeholder review even if it requires releasing the criteria later in the year.

Thank you for the opportunity to provide comments on this specification. Energy Solutions seeks to be a strong partner of EPA as we work together to advance local, state, and national

⁵ <https://etrm.anbetrack.com/#/workarea/home?token=294a255e6c37343b615e;>
<https://etrm.anbetrack.com/#/workarea/trm/NHS/COM-FS-ULTF/2022-2023%20Plan%20TRM/version/1>

environmental and energy efficiency priorities. Please do not hesitate to reach out to our offices to discuss any of these matters further.