TRUE MANUFACTURING CO., INC.

To: Ryan Fogle
U.S. Environmental Protection Agency

From: Brandon Clay
True Manufacturing Company

Date: March 19, 2024

Subject: ENERGY STAR Version 2.0 Laboratory Grade Refrigerators and Freezers Draft 2: True Mfg Comments

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Thank you for the opportunity to comment. In response to *ENERGY STAR Version 2.0 Laboratory Grade Refrigerators and Freezers Draft 2*, True Manufacturing Company offers the following comments:

Peak Variance Definition

In Section 1 "Definitions", a High Performance Lab Grade Refrigerator (LGR) is being defined as having a peak variance no greater than 4°C. This a significant reduction from the previous peak variance requirement of 6°C. A 6°C peak variance is consistent with other established industry standards. The NSF/ANSI 456 standard is a performance test that requires the temperature measurement devices to be maintained between 2-8°C, which is equivalent to a 6°C peak variance. The *CDC Vaccine Storage and Handling Toolkit* [1] also recommends the same 2-8°C range for refrigerated storage equipment.

In addition to diverting from industry standards, changing the peak variance would also reduce the number of products that meet the Minimum Daily Energy Consumption (MDEC) requirements. Analyzing the data on the *Anonymized Data Set* [2] shows that if the peak variance requirement is changed, the number of High Performance LGR's meeting the MDEC requirements would be reduced to 17%. This is lower than the 29% value that is reported on page 5 of *ENERGY STAR Version 2.0 Laboratory Grade Refrigerators and Freezers Draft 2*.

We support keeping the peak variance requirement at 6°C to be homogeneous with established industry standards and maintain the passing rates reported in *ENERGY STAR Version 2.0 Laboratory Grade Refrigerators and Freezers Draft 2*.

High Performance LGR Data

Upon reviewing the *Anonymized Data Set*, there were issues we found in the data that will significantly affect how many models meet the new ENERGY STAR v2.0 criteria.

First, a new qualified product list (QPL) was pulled from the *ENERGY STAR Product Finder* [3] on March 11, 2024. We found 54 unique, High Performance LGR models that are not listed on the *Anonymized Data Set*. On Figure 1, the original models listed on the *Anonymized Data Set* are shown with a blue circle marker and the additional 54 models are shown by a green triangle marker.

On the contrary, there are 4 High Performance LGR models listed on the *Anonymized Data Set* that are no longer listed on the QPL. These models are shown with red "X" markers on Figure 1. There are also data points where the energy consumption listed on the *Anonymized Data Set* and QPL appear to be misreported. The energy consumption of these models is significantly different than models of similar type and size. Further investigation showed that the energy consumption listed on the QPL is considerably different than what the manufacturer is marketing on their specification sheet. On Figure 1, these data points are shown with red "X" markers.

We recommend that all the MDEC formulas and passing rates are reevaluated with the latest QPL. The data in the QPL needs to be verified by reviewing the data submitted by the certification body.

MDEC Formula: Solid Door High Performance LGR

We believe that the MDEC formulas for solid door High Performance LGR's will create a greater reduction in qualifying products than intended and the formulas need to be reconsidered. Looking at the data from the *Anonymized Data Set* without any of the considerations in the section above, 7 out of the 23 solid door High Performance LGR's will pass the ENERGY STAR v2.0 criteria. However, there would be 0 passing models in the 12 to 30 cu. ft. range. This is a common internal volume for a single door upright, a very popular cabinet

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type in the laboratory and pharmaceutical market. Of all LGR and Lab Grade Freezer (LGF) models listed on the *Anonymized Data Set*, 40% fall within this range of internal volumes.
Furthermore, if we remove from the dataset the models that are no longer listed on the QPL or are misreported, only a total of 3 solid door High Performance LGR models will qualify for ENERGY STAR v2.0. There will be 0 products in the 3 to 30 cu. ft. range. This is significant because 72% of the LGR and LGF models listed on the *Anonymized Data Set* are between 3 and 30 cu. ft.
To have such a large segment of solid door LGR's not qualify for ENERGY STAR would cause confusion in the market and make it difficult for the end users to differentiate between high and low efficiency models. We recommend new MDEC formulas for the solid door High Performance LGR's that have higher energy consumption allowances.
A plot of the data for solid door High Performance LGR's is shown in Figure 2 below.

MDEC Formula: Glass Door High Performance LGR
We believe that the MDEC formulas for glass door High Performance LGR's will create a greater reduction in qualifying products than intended and the formulas need to be reconsidered, in particular for the $0 < V < 10$ cubic foot bin. Looking at the data from the *Anonymized Data Set*, there are 3 out of 15 (20%) glass door High Performance LGR's in this bin that would pass the ENERGY STAR v2.0 criteria. This is much lower than the overall pass rate for glass door High Performance LGR's of 29%.
When removing the models that are no longer listed on the QPL or that are misreported, there will be 0 models meeting the criteria.
Another reason the MDEC formula for the glass door High Performance LGR's needs reconsideration, is that there is a range where a glass door model will have a lower kWh requirement than an equivalent solid door model (see Fig. 1). A door completely insulated with polyurethane foam will always have a higher thermal resistance than an equally sized door with a glass insert, and thus, we would always expect a solid door model to consume less energy than an equivalent glass door model.
We suggest that a new formula for the glass door High Performance LGR ($0 < V < 10$ bin) be considered that would ensure that the energy consumption requirement is always higher than a solid door of the same internal volume. Also, using the latest QPL data, the new formula should have the same pass rate as the other bins.
A plot of the data for glass door High Performance LGR's is shown in Figure 3 below.

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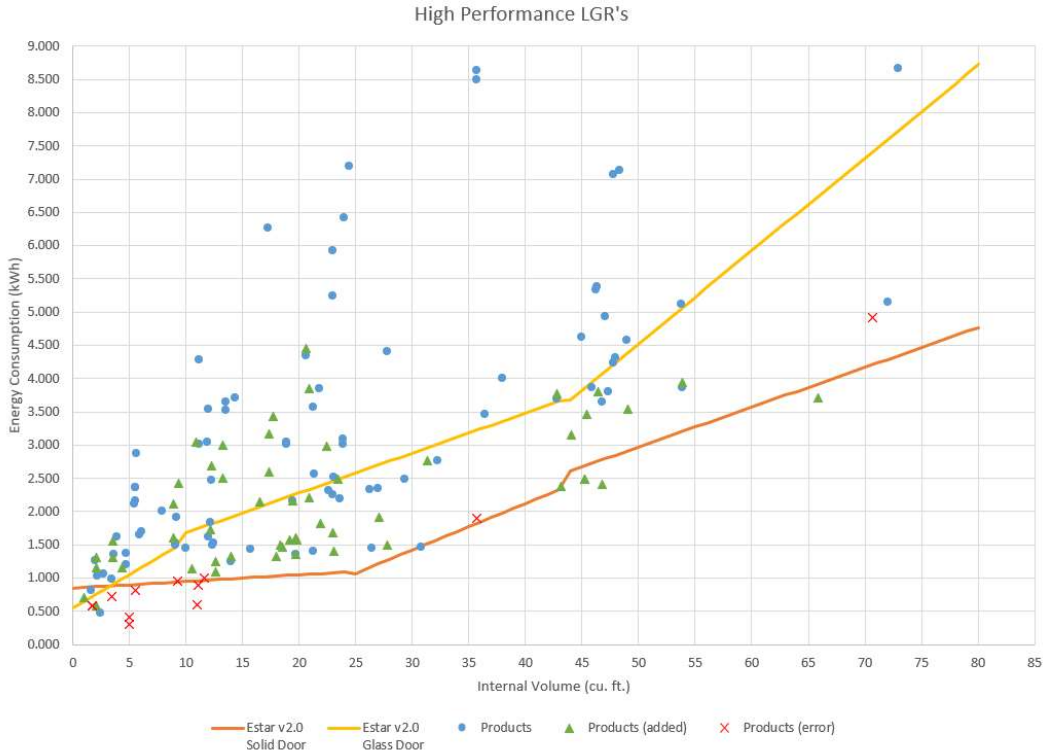

Figure 1. Plot of Energy Consumption vs. Internal Volume for High Performance Lab Grade Refrigerators listed on the QPL with the ENERGY STAR v2.0 proposed solid door and glass door criteria lines.

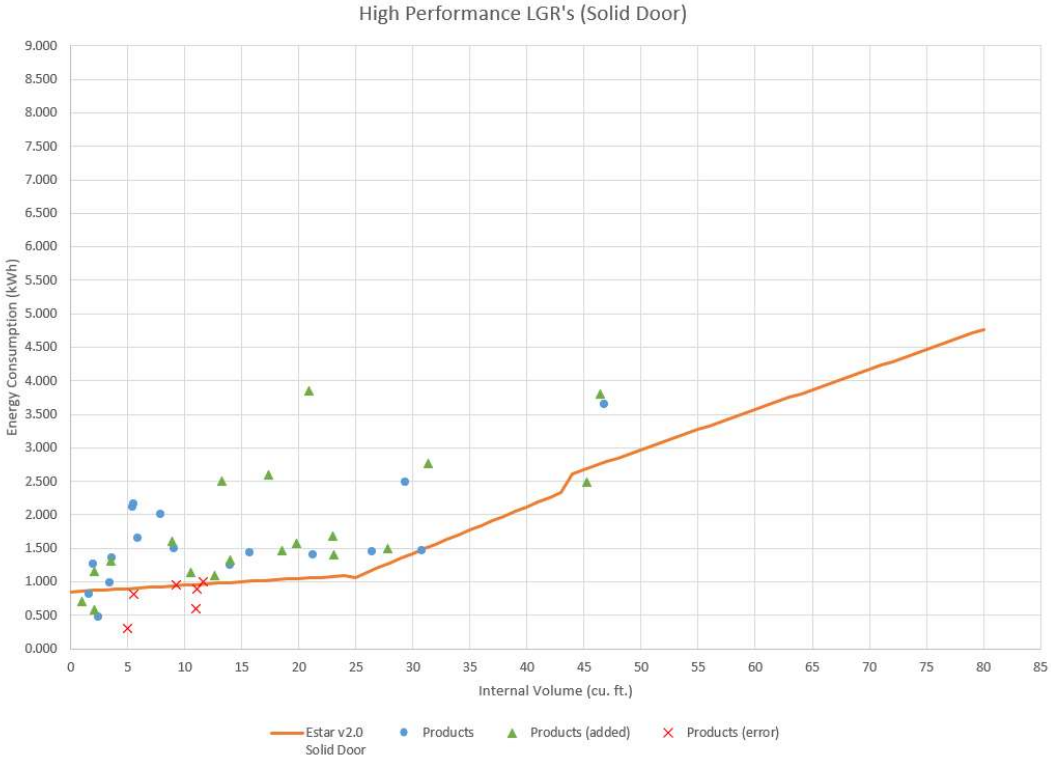

Figure 2. Plot of Energy Consumption vs. Internal Volume for solid door High Performance Lab Grade Refrigerators listed on the QPL with the ENERGY STAR v2.0 proposed solid door criteria lines.

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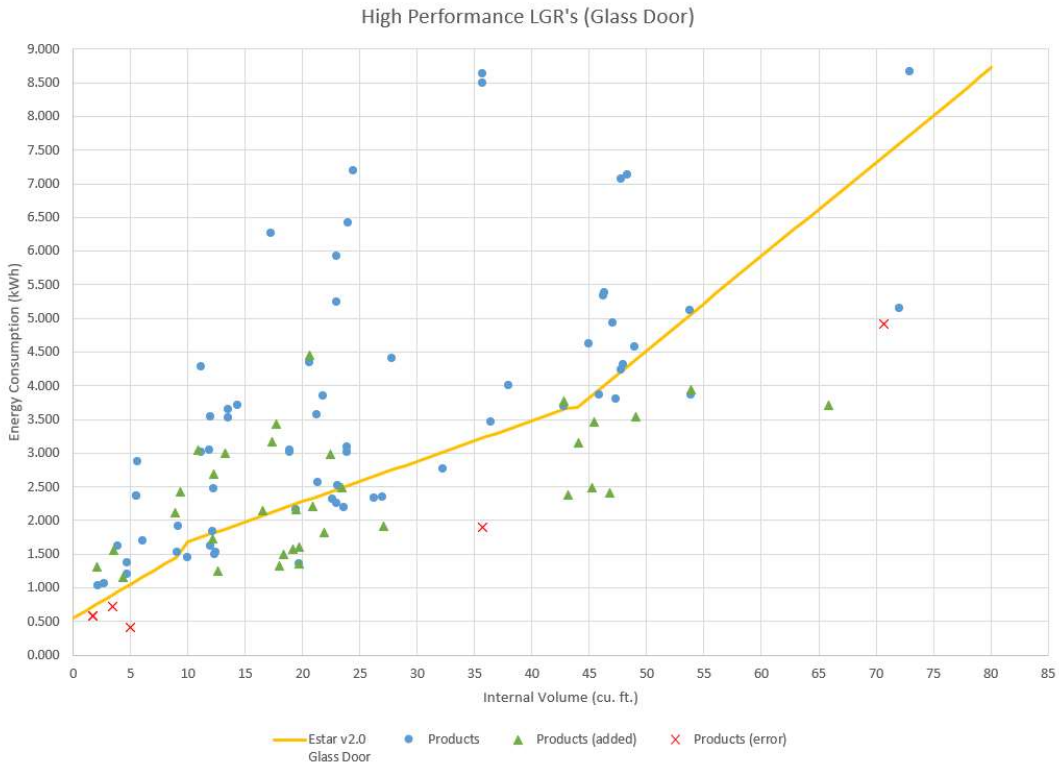

Figure 3. Plot of Energy Consumption vs. Internal Volume for glass door High Performance Lab Grade Refrigerators listed on the QPL with the ENERGY STAR v2.0 proposed solid door criteria lines.

References

[1] *CDC Vaccine Storage and Handling Toolkit*. Retrieved from https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.htmlEnergy Star Product Finder

[2] *Anonymized Data Set.* Retrieved from *https://www.energystar.gov/sites/default/files/2024-02/ENERGY%20STAR%20Version%202.0%20Laboratory%20Grade%20Refrigerators%20and%20Freezers%20Draft%202%20Anonymized%20Data%20Set.xlsx*

[3] *Qualified Product List*. Retrieved from *https://www.energystar.gov/productfinder/product/certified-lab-grade-refrigeration/results*