

September 3, 2021

Ann Bailey
ENERGY STAR Product Labeling
1200 Pennsylvania Avenue NW
Washington DC, 20004

Sent by email to: MostEfficient@energystar.gov

Re: Samsung Comments on Proposed Most Efficient 2022 Criteria

Dear Director Bailey:

Samsung Electronics America, Inc. (Samsung) respectfully submits these comments on EPA's proposed Most Efficient 2022 Criteria. A world leader in technology, Samsung is a leading home appliance brand in the U.S. committed to providing energy efficient products to U.S. consumers. Samsung has won the ENERGY STAR Partner of the Year Award for Sustained Excellence eight times, including the ENERGY STAR Corporate Commitment Award in 2021 – a recognition that was last granted nine years ago. Samsung also won the 2021 ENERGY STAR Emerging Technology Award for Residential Induction Cooking Tops, 2020 ENERGY STAR Emerging Technology Award for Advanced Adaptive Compressors, the 2016 ENERGY STAR Emerging Technology Award for Innovative Refrigerant Systems and the 2013 ENERGY STAR Emerging Technology Award for Advanced Clothes Dryers.

Samsung has invested heavily in energy efficient technologies as part of our product design process, which we believe is valuable for consumers and the environment alike. Samsung sees ENERGY STAR as a gold standard for public-private partnership and we greatly value the Most Efficient recognition as appreciating high levels of energy efficiency, which demonstrate measures that are a critical part of tackling climate change.

Variable Speed Compressors and Load Adaptive Controls

Samsung appreciates EPA's leadership on recognizing the energy efficiency benefits of variable speed compressor (VSC) refrigerators with advanced adaptive controls through the 2020-2021 Emerging Technology Award.

Refrigerators operate under highly variable load conditions in the household throughout the day and night. For example, door openings, which allow external air to enter the refrigerator and increase the load on the refrigerator's compressor to maintain cool temperatures, vary greatly in frequency between waking and sleeping hours. VSCs and adaptive control algorithms offer significant energy savings under varying load conditions when compared to single speed compressors, by enabling compressors to change their speed and optimize their performance in response to loading changes. (As an additional benefit, these new technologies also minimize temperature fluctuations to enable better food conservation.)

Test procedures have already been adopted in many parts of the world that address this issue. The consensus standard IEC 62552: 2015 uses both 32° C (89.6° F) and 16° C (60.8° F) as test ambient temperatures and estimates the rated energy consumption as a weighted average of the results of tests at these temperatures. Multiple ambient testing points better represent the load changes, such as day vs. night and door openings and closings.

The European market as well as other regions are focused on advanced technologies moving toward VSC compressors and adaptive controls. Similarly, there is a great opportunity for the United States to accelerate the nascent market transformation set off by EPA's 2020 Emerging Technology Award for Advanced Adaptive Compressors. For this reason, Samsung proposes that EPA consider working with DOE toward a representative test procedure reflecting real world use of highly efficient refrigerators as a basis for recognition under Most Efficient in 2022 and ENERGY STAR recognition in the future.

Refrigerator Proposed Qualification Criteria

Samsung proposes that EPA consider setting the qualification criteria at 25% higher than the DOE minimum for refrigerators instead of the current draft requirement of 30% higher than the DOE minimum efficiency standards. Samsung believes setting the requirement at the higher level (*e.g.*, 30%) may inadvertently result in only smaller-sized refrigerators being qualified for Most Efficient 2022. This is because it is relatively easier to reach higher efficiency levels in smaller configurations based on the how the DOE minimum energy performance standard is set based on refrigerator volumes. For instance, smaller configurations can have thicker walls with more insulation which results in lower heat gain into the cabinet. Refrigerators with larger internal volumes face a much tougher challenge and require not only limiting the foam thickness, but also require vacuum insulated panels (VIP) and higher coefficient of performance (COP) system components. Moreover, smaller volume refrigerators are not constrained as much given the available exterior cutout dimensions in most kitchens.

Setting the threshold at 25% above the DOE minimum for refrigerators would incentivize innovation and also allow more mainstream refrigerators to be represented in the Most Efficient 2022 category, while promoting top-tier energy efficiency. Since inclusion of larger capacity refrigerators would result in a larger market share and volume of products being included in Most Efficient category, the GHG emissions savings would also be greater by setting the threshold at 25%.

We greatly value the ENERGY STAR program and would appreciate EPA's thorough consideration of our comments. We would be glad to discuss these matters with you further.

Respectfully submitted,

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