Comments to EPA on Draft 1 Version 5.0 of Refrigerator Energy Star Specification
Submitted by
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Submitted via email to appliances@energystar.gov

Sub Zero-Wolf Inc. appreciates the opportunity to submit written comments in response to EPA's Draft 1 Version 5.0 Energy Star Specification for refrigerators, refrigerator-freezers and freezers. Sub Zero is a family-owned company that has been headquartered in Madison, Wisconsin for over 65 years. While technically not a small business, we are significantly smaller than the majority of major appliance manufacturers located both in the U.S, and worldwide. Sub Zero developed the niche market for customized built-in refrigerators and manufactures these, as well as Wolf cooking products, solely in the U.S., in Wisconsin and in Phoenix, Arizona.

In DOE's recent Final Rule setting new refrigerator and freezer energy efficiency standards for 2014, DOE recognized the unique consumer utility provided by built-in products and established eleven new product classes, namely:

- 3-BI Built-in refrigerator-freezers – automatic defrost with top-mounted freezer without an automatic icemaker
- 3I-BI Built-in refrigerator-freezers – automatic defrost with top-mounted freezer with an automatic icemaker without through-the-door ice service
- 3A-BI Built-in all-refrigerators - automatic defrost
- 4-BI Built-in refrigerator-freezers – automatic defrost with side-mounted freezer without an automatic icemaker
- 4I-BI Built-in refrigerator-freezers – automatic defrost with side-mounted freezer with an automatic icemaker without through-the-door ice service
- 5-BI Built-in refrigerator-freezers – automatic defrost with bottom-mounted freezer without an automatic icemaker
- 5I-BI Built-in refrigerator-freezers – automatic defrost with bottom-mounted freezer with an automatic icemaker without through-the-door ice service
- 5A-BI Built-in refrigerator-freezers – automatic defrost with bottom-mounted freezer with through-the-door ice service
- 7-BI Built-in refrigerator-freezers – automatic defrost with side-mounted freezer with through-the-door ice service
- 9-BI Built-in upright freezers with automatic defrost without an automatic icemaker
- 9I-BI Built-in upright freezers with automatic defrost with an automatic icemaker

We would request that EPA in this specification acknowledge the unique utility of built-in products that are offered to consumers who wish to participate in the Energy Star Program, and

also recognize the more stringent technical challenges that built-ins face to achieve continuing increases in energy efficiency.

Built-in refrigeration products have inherent functional differences from conventional free-standing products. These lead to lower efficiency, or higher energy consumption, for built-ins with comparable insulation, refrigeration system components, and structural characteristics as their free-standing counterparts. Therefore, it has been more difficult for built-ins to meet each succeeding requirement for higher efficiency. Efficiency improvements that may be justified for refrigerator-freezers in general can exceed practical limits of technical feasibility, cost, manufacturability and consumer acceptance for built-ins. Up to now, manufacturers have been able to design built-ins to meet the same levels as free-standing units by using detailed computer analyses accounting for every small bit of energy use and by applying additional levels of technology and more costly components. However, Sub Zero's experience shows that we have reached a critical point where the rate of efficiency improvement in built-ins will henceforward lag conventional, high production volume, free-standing products. Therefore, for the 2014 Federal standards rule and beyond, we proposed that DOE analyze built-ins as product classes distinct from free-standing refrigerators and set standards for these products that imposed equivalent cost adders and burdens on manufacturers. DOE's rulemaking analysis confirmed our findings.

Built-in refrigeration products provide a unique usefulness, or "utility," to the consumer as evidenced by a small (built-ins comprise less than 1.5 % of refrigerator shipments) but steady and attractive market. They can be fully integrated into kitchen cabinetry, providing the clean, upscale appearance preferred by certain customers. Built-ins often have different geometries than free-standing models and more doors and drawers, leading to increased gasket heat loss per cubic foot of storage volume. Constrained by cabinets on each side and above, access to condenser airflow needed by the refrigeration system is limited. Requirements for complex door movement (to move the refrigerator door out and away from adjacent cabinetry) result in larger hinge assemblies, reducing available space for insulation. Increasing door insulation thickness to reduce heat leak is widely used by manufacturers of free-standing units to reduce cabinet heat load. However, this is not a practical option for built-ins due to the need to maintain the planar surface of kitchen cabinet doors. For the same reason, cabinet depth cannot be increased to allow thicker wall insulation while maintaining storage volume. This challenges designers to develop technologies and design methods to reduce heat leaks which are costly and have practical limits.

DOE formulates a separate energy conservation standard for each product class. The criteria for different classes include "capacity or other performance-related features such as those that provide utility to the consumer, or others deemed appropriate by the Secretary that would justify the establishment of a separate energy conservation standard. (42 U.S.C. 6295 (q) and 6316(a))." For the reasons discussed above, built-ins offer unique utility to the customer and have performance issues different from high production volume, free-standing products. DOE found that separate product classes and standards levels are justified in accordance with the above criteria. For the 2014 standards, DOE formally defined built-ins and set allowable energy

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consumption levels from 5% to 15% higher for built-in product classes compared to free-standing refrigerators and freezers.

In recognition of DOE's recent actions and EPA's continuing desire to make Energy Star products available to the broad range of consumers who desire to purchase them in accordance to the Energy Star principle of "no sacrifice," we would propose that EPA recognize the Built-in Product Classes listed above. For the 2013 specification, given that DOE analyses confirmed that most built-in products already utilize most, if not all, of the design options analyzed for the 2014 standard levels (this is especially the case for Energy Star products), we propose that EPA maintain the current Version 4.1 levels for built-in products until Version 6.0 levels are implemented. These levels represent for refrigerators and refrigerator-freezers, a 20% reduction in energy consumption from the 2001 Federal efficiency standards and for freezers, a 10% reduction. We would also propose that new built-in products that meet Smart Appliance requirements be eligible for a Connected Appliance allowance.

For Version 6.0 Energy Star levels, we propose that EPA, as part of its discussion with DOE on developing crosswalk relations, factor in the offsets for built-ins that have been developed by DOE for the 2014 standards. These could be included as product class specific Annual Functional Adders expressed as a percentage of AEC_{BASE}, the base energy consumption, or determined through other calculations.

We are confident that EPA has no desire to impose more of a burden on manufacturers of built-in products than on the industry in general. Sub Zero strongly desires to continue to participate in the Energy Star Program. The increases in efficiency levels proposed for free-standing refrigerators will make it extremely difficult, if not technically and financially unfeasible, for us to continue to introduce built-in Energy Star models to the marketplace. Therefore, we will no longer be able to effectively participate without energy consumption offsets that reflect the inherent differences in our products compared to the vast majority of refrigerators on the market. Our company welcomes the opportunity for further discussion and to provide EPA with additional detailed information before EPA published its Second Draft.

Respectfully Submitted,

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