**ENERGY STAR® 2020 Emerging Technology Award Requirements: Advanced Adaptive Compressors**

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| Option 1 | Outperform the measured Annual Energy Consumption for the Federal Minimum Standard by 30%<sup>2</sup>  
Perform the 10 CFR 430, Subpart B Appendix A – Residential Refrigerators test method for refrigerators and refrigerator-freezers or perform the 10 CFR 430, Subpart B Appendix B – Residential Freezers test method for freezers |
| Option 2 | With the compressor in the adaptive mode<sup>3</sup>, outperform the Annual Energy Consumption by 25% compared to when the compressor is in a fixed-speed mode  
Perform the appropriate test procedure described in Option 1 comparing only the steady-state energy consumption<sup>4</sup> per Section 5.2.1 with all compartment temperature controls set at their median position midway between their warmest and coldest settings per Section 3.2.1 and average the results from the following three ambient temperature test conditions for Section 2.1.1: 60 °F, 75 °F, and 90 °F<sup>5</sup> |
|  | Provide documentation of the model information and test results for the product being submitted for consideration |
|  | Energy measurements must be performed at an EPA-recognized accredited lab<sup>6</sup> or at manufacturer lab certified by an EPA-recognized Certification Body under the Data Acceptance Program |
| **Low-GWP Refrigerant & Foam** | Contains refrigerant and foam with a Global Warming Potential (GWP) less than 15 and approved for use in the U.S. market  
Listed as Acceptable by the U.S. EPA Significant New Alternatives Policy (SNAP) Program for refrigerants<sup>7</sup> and foams<sup>8</sup>. Product documentation listing the refrigerants and foams contained within the product. |
| **Non-Built-In** | The model shall not be a built-in model per the DOE product class definitions  
10 CFR 430,2 Definitions |
| **Total Volume** | Total Volume<sup>9</sup> ≥ 7.75 (cu-ft)  
10 CFR 430, Subpart B Appendix A or B, Section 5.3 |
| **Additional Product Requirements** |  |
| **Warranty Minimum** | One year parts and labor  
Copy of warranty agreement |
| **Certification** | Must meet all applicable U.S. electrical safety requirements  
Copy of case files |
| **Commercial Status** | This program recognizes only products available for sale in the U.S. |

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<sup>1</sup> Intended for residential refrigeration products that pair advanced compressors with sensor-driven control systems capable of capacity modulation.

<sup>2</sup> In meeting the Option 1 criteria, the model must have a variable speed compressor with control systems capable of capacity modulation.

<sup>3</sup> The refrigerator shall be shipped with the compressor in the adaptive mode.

<sup>4</sup> For example, in Section 5.2.1.3, the steady-state energy consumption is equal to 1440*E1/T1*K.

<sup>5</sup> The three temperatures are intended to demonstrate the advanced efficiency through a three-point performance curve.

<sup>6</sup> [ENERGY STAR Partner Resources Third Party Certification Webpage](https://www.epa.gov/snap/partner-resources-third-party-certification-webpage)

<sup>7</sup> List of acceptable and unacceptable refrigerants in residential refrigerator-freezers [https://www.epa.gov/snap/substitutes-household-refrigerators-and-freezers#self](https://www.epa.gov/snap/substitutes-household-refrigerators-and-freezers#self)

<sup>8</sup> List of acceptable and unacceptable foams in residential refrigerator-freezers [https://www.epa.gov/snap/substitutes-rigid-polyurethane-appliance](https://www.epa.gov/snap/substitutes-rigid-polyurethane-appliance)

<sup>9</sup> Total Volume = Fresh Food Compartment Volume + Freezer Compartment Volume; in cubic feet.