

**ENERGY STAR® 2020 Emerging Technology Award Requirements:
Advanced Adaptive Compressors¹**

Criteria		Test Method/Required Documentation
Product Characteristics		
Energy Efficiency	Option 1	Outperform the measured Annual Energy Consumption for the Federal Minimum Standard by 30% ²
	Option 2	With the compressor in the adaptive mode ³ , outperform the Annual Energy Consumption by 25% compared to when the compressor is in a fixed-speed mode
	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	
	Perform the appropriate test procedure described in Option 1 comparing only the steady-state energy consumption ⁴ 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 ⁵	
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 ⁶ 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 ⁷ and foams ⁸ . 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 ⁹ ≥ 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.	

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

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

³ The refrigerator shall be shipped with the compressor in the adaptive mode.

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

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

⁶ [ENERGY STAR Partner Resources Third Party Certification Webpage](#)

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

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

⁹ Total Volume = Fresh Food Compartment Volume + Freezer Compartment Volume; in cubic feet.