



ENERGY STAR® Program Requirements for Residential Refrigerators and Freezers

Partner Commitments

Following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacture and labeling of ENERGY STAR qualified products. The ENERGY STAR Partner must adhere to the following partner commitments:

Qualifying Products

1. Comply with current ENERGY STAR Eligibility Criteria, which define performance requirements and test procedures for residential refrigerators and freezers. A list of eligible products and their corresponding Eligibility Criteria can be found at www.energystar.gov/specifications.
2. **Prior to associating the ENERGY STAR name or mark with any product**, obtain written certification of ENERGY STAR qualification from a Certification Body recognized by EPA for residential refrigerators and freezers. As part of this certification process, products must be tested in a laboratory recognized by EPA to perform residential refrigerators and freezer testing. A list of EPA-recognized laboratories and Certification Bodies can be found at www.energystar.gov/testingandverification.

Using the ENERGY STAR Name and Marks

3. Comply with current ENERGY STAR Identity Guidelines, which define how the ENERGY STAR name and marks may be used. Partner is responsible for adhering to these guidelines and ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance. The ENERGY STAR Identity Guidelines are available at www.energystar.gov/logouse.
4. Use the ENERGY STAR name and marks only in association with qualified products. Partner may not refer to itself as an ENERGY STAR Partner unless at least one product is qualified and offered for sale in the U.S. and/or ENERGY STAR partner countries.
5. Provide clear and consistent labeling of ENERGY STAR qualified refrigerators and freezers.
 - 5.1. The ENERGY STAR mark must be clearly displayed on the top/front of the product (by placement of the ENERGY STAR logo on the Federal Trade Commission's (FTC's) EnergyGuide label, on product labels, and/or as a permanent mark), in product literature (i.e., user manuals, spec sheets, etc.), and on the manufacturer's Internet site where information about ENERGY STAR qualified models is displayed.
 - 5.2. It is also recommended that the mark appear on the product packaging.

Verifying Ongoing Product Qualification

6. Participate in third-party verification testing through a Certification Body recognized by EPA for residential refrigerators and freezers, providing full cooperation and timely responses. EPA/DOE may also, at its discretion, conduct tests on products that are referred to as ENERGY STAR qualified. These products may be obtained on the open market, or voluntarily supplied by Partner at the government's request.

Providing Information to EPA

7. Provide unit shipment data or other market indicators to EPA annually to assist with creation of ENERGY STAR market penetration estimates, as follows:
 - 7.1. Partner must submit the total number of ENERGY STAR qualified residential refrigerators and freezers shipped in the calendar year or an equivalent measurement as agreed to in advance by EPA and Partner. Partner shall exclude shipments to organizations that rebrand and resell the shipments (unaffiliated private labelers).
 - 7.2. Partner must provide unit shipment data segmented by meaningful product characteristics (e.g., type, capacity, presence of additional functions) as prescribed by EPA.
 - 7.3. Partner must submit unit shipment data for each calendar year to EPA or an EPA-authorized third party, preferably in electronic format, no later than March 1 of the following year.

Submitted unit shipment data will be used by EPA only for program evaluation purposes and will be closely controlled. If requested under the Freedom of Information Act (FOIA), EPA will argue that the data is exempt. Any information used will be masked by EPA so as to protect the confidentiality of the Partner.
8. Report to EPA any attempts by recognized laboratories or Certification Bodies (CBs) to influence testing or certification results or to engage in discriminatory practices.
9. Notify EPA of a change in the designated responsible party or contacts within 30 days using the My ENERGY STAR Account tool (MESA) available at www.energystar.gov/mesa.

Performance for Special Distinction

In order to receive additional recognition and/or support from EPA for its efforts within the Partnership, the ENERGY STAR Partner may consider the following voluntary measures, and should keep EPA informed on the progress of these efforts:

- Provide quarterly, written updates to EPA as to the efforts undertaken by Partner to increase availability of ENERGY STAR qualified products, and to promote awareness of ENERGY STAR and its message.
- Consider energy efficiency improvements in company facilities and pursue benchmarking buildings through the ENERGY STAR Buildings program.
- Purchase ENERGY STAR qualified products. Revise the company purchasing or procurement specifications to include ENERGY STAR. Provide procurement officials' contact information to EPA for periodic updates and coordination. Circulate general ENERGY STAR qualified product information to employees for use when purchasing products for their homes.
- Feature the ENERGY STAR mark(s) on Partner website and other promotional materials. If information concerning ENERGY STAR is provided on the Partner website as specified by the ENERGY STAR Web Linking Policy (available in the Partner Resources section of the ENERGY STAR website), EPA may provide links where appropriate to the Partner website.
- Ensure the power management feature is enabled on all ENERGY STAR qualified displays and computers in use in company facilities, particularly upon installation and after service is performed.
- Provide general information about the ENERGY STAR program to employees whose jobs are relevant to the development, marketing, sales, and service of current ENERGY STAR qualified products.
- Provide a simple plan to EPA outlining specific measures Partner plans to undertake beyond the program requirements listed above. By doing so, EPA may be able to coordinate, and communicate Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR website, etc. The plan may be as simple as providing a list of planned activities or milestones of which Partner would like EPA to be aware. For example, activities may include: (1) increasing the availability of ENERGY STAR qualified products by

converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrating the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) providing information to users (via the website and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products; and (4) building awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event.

- Join EPA's SmartWay Transport Partnership to improve the environmental performance of the company's shipping operations. The SmartWay Transport Partnership works with freight carriers, shippers, and other stakeholders in the goods movement industry to reduce fuel consumption, greenhouse gases, and air pollution. For more information on SmartWay, visit www.epa.gov/smartway.
- Join EPA's Green Power Partnership. EPA's Green Power Partnership encourages organizations to buy green power as a way to reduce the environmental impacts associated with traditional fossil fuel-based electricity use. The partnership includes a diverse set of organizations including Fortune 500 companies, small and medium businesses, government institutions as well as a growing number of colleges and universities. For more information on Green Power, visit www.epa.gov/greenpower.



ENERGY STAR® Program Requirements Product Specification for Residential Refrigerators and Freezers

Eligibility Criteria Version 4.1

Note: The February 2011 revision of this product specification includes Section 4.C, which specifies principles of interpretation that are to be applied when testing products for ENERGY STAR certification. This content was erroneously omitted when Version 4.1 specification was finalized in October 2010. The new Section 4.C incorporates principles of interpretation that are now contained in the DOE test procedure, by referencing the applicable section of the Code of Federal Regulations (CFR).

Following is the **Version 4.1** product specification for ENERGY STAR residential qualified refrigerators and freezers. A product shall meet all of the identified criteria to earn the ENERGY STAR.

1) Definitions: Below are the definitions of the relevant terms in this document.

- A. **Residential Electric Refrigerator:** A cabinet designed for the refrigerated storage of food at temperatures above 32°F and below 39°F, configured for general refrigerated food storage, and having a source of refrigeration requiring single phase, alternating current electric energy input only. An electric refrigerator may include a compartment for the freezing and storage of food at temperatures below 32°F, but does not provide a separate low temperature compartment designed for the freezing and storage of food at temperatures below 8°F.
- B. **Residential Freezer:** A cabinet designed as a unit for the freezing and storage of food at temperatures of 0 °F. or below, and having a source of refrigeration requiring single phase, alternating current electric energy input only.
- C. **Residential Electric Refrigerator-Freezer:** A cabinet which consists of two or more compartments with at least one of the compartments designed for the refrigerated storage of food at temperatures above 32 °F and with at least one of the compartments designed for the freezing and storage of food at temperatures below 8 °F which may be adjusted by the user to a temperature of 0 °F or below. The source of refrigeration requires single phase, alternating current electric energy input only.
- D. **Adjusted Volume:** Adjusted volume ("AV") is the sum of the fresh food compartment volume in cubic feet, and the product of an adjustment factor and the net freezer compartment volume.
- E. **Compact:** Any refrigerator, refrigerator-freezer or freezer with total volume less than 7.75 cubic feet (220 liters rated volume as determined in Appendix A1 and B1 of 10 CFR 430 subpart B) and 36 inches (0.91 meters) or less in height.
- F. **Basic Model:** Units of a given type of covered product (or class thereof) manufactured by one manufacturer and have the same primary energy source, which have electrical characteristics that are essentially identical, and which do not have any differing physical or functional characteristics that affect energy consumption.

2) Scope:

A. Included Products: Products that meet the definition of a residential electric refrigerator or freezer as specified herein are eligible for ENERGY STAR qualification. Specific product classes eligible are listed in Table 1, below.

Note: Until the new DOE product class proposal is finalized, bottom-mount freezers with through-the-door ice are allowed under the ENERGY STAR program with special approval from EPA.

B. Excluded Products: Commercial models, refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet, and freezers with total refrigerated volume exceeding 30 cubic feet are not eligible for ENERGY STAR.

3) Qualification Criteria:

A. Energy Efficiency Requirements:

Table 1: Energy Efficiency Criteria for Residential Refrigerators and Freezers

Product Class		ENERGY STAR Energy Use (kWh/year)
1	Refrigerator & Refrigerator-Freezer with manual defrost	$\leq 7.056*AV + 198.72$
2	Refrigerator-Freezer with partial automatic defrost	
3	Top-Mount Freezer without through-the-door ice	$\leq 7.840*AV + 220.8$
4	Side-Mount Freezer without through-the-door ice	$\leq 3.928*AV + 406$
5	Bottom-Mount Freezer without through-the-door ice	$\leq 3.680*AV + 367.2$
6	Top-Mount Freezer with through-the-door ice	$\leq 8.160*AV + 284.8$
7	Side-Mount Freezer with through-the-door ice	$\leq 8.080*AV + 324.8$
8	Upright freezer with manual defrost	$\leq 6.795*AV + 232.47$
9	Upright freezer with automatic defrost	$\leq 11.187*AV + 293.49$
10	Chest Freezer	$\leq 8.892*AV + 129.33$
11	Compact Refrigerator and Refrigerator-Freezer with manual defrost	$\leq 8.560*AV + 239.2$
12	Compact Refrigerator and Refrigerator-Freezer with partial automatic defrost	$\leq 5.600*AV + 318.4$
13	Compact Refrigerator-Freezer-automatic defrost with top freezer	$\leq 10.160*AV + 284$
14	Compact Refrigerator-side mounted freezer with automatic defrost	$\leq 6.080*AV + 400.8$
15	Compact Refrigerator-bottom mount Freezer with automatic defrost	$\leq 10.480*AV + 293.6$
16	Compact Upright Freezers with manual defrost	$\leq 7.824*AV + 200.64$
17	Compact Upright Freezers with automatic defrost	$\leq 9.120*AV + 312.8$
18	Compact Chest Freezer	$\leq 8.360*AV + 121.6$

B. Determination of Adjusted Volume: Adjusted Volume (AV) shall be calculated using the following:

$$\text{Refrigerator Adjusted Volume} = \text{Fresh Volume} + (1.63 \times \text{Freezer Volume})$$

$$\text{Freezer Adjusted Volume} = 1.73 \times \text{Freezer Volume}$$

C. Significant Digits and Rounding:

- a. All calculations shall be carried out with actual measured or observed values. Only the final result of a calculation shall be rounded. Calculated results shall be rounded to the second decimal place.
- b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact values without any benefit from rounding.

Note: Model numbers used for ENERGY STAR qualified products shall follow FTC and DOE guidelines.

4) Test Requirements:

- A. A representative unit shall be selected for testing based on the definition for Basic Model provided in Section 1, above.
- B. When testing residential refrigerators and freezers, the following test methods shall be used to determine ENERGY STAR qualification:

Table 2: Test Methods for ENERGY STAR Qualification

ENERGY STAR Requirement	Test Method Reference
Energy Consumption (kWh/year)	10 CFR 430, Subpart B Appendix A1 – Residential Refrigerators Appendix B1 – Residential Freezers

C. When determining energy performance for purposes of ENERGY STAR certification, the principles of interpretation, contained in 10 CFR 430.23 (a) (10), should be applied to the test procedure.

- 5) **Effective Date:** The ENERGY STAR Residential Refrigerator and Freezer specification shall take effect on **April 28, 2008**. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on the model's date of manufacture. The date of manufacture is specific to each unit and is the date (e.g., month and year) on which a unit is considered to be completely assembled.
- 6) **Future Specification Revisions:** EPA reserves the right to change the specification should technological and/or market changes affect its usefulness to consumers, industry or the environment. In keeping with current policy, revisions to the specification are arrived at through industry discussions. In the event of a specification revision, please note that ENERGY STAR qualification is not automatically granted for the life of a product model.