



ENERGY STAR® Program Requirements for Commercial Refrigerators and Freezers

Partner Commitments Version 2.0 - DRAFT 1

Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified commercial refrigerators and freezers. The ENERGY STAR Partner must adhere to the following program requirements:

- comply with current ENERGY STAR Eligibility Criteria, defining the performance criteria that must be met for use of the ENERGY STAR certification mark on commercial refrigerators and freezers and specifying the testing criteria for commercial refrigerators and freezers. EPA may, 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 EPA's request;
- comply with current ENERGY STAR Identity Guidelines, describing how the ENERGY STAR labels and name may be used. Partner is responsible for adhering to these guidelines and for ensuring that its authorized representatives, such as advertising agencies, dealers, and distributors, are also in compliance;
- qualify at least one ENERGY STAR labeled commercial refrigerator or freezer model within one year of activating the commercial refrigerators and freezers portion of the agreement. When Partner qualifies the product, it must meet the specification (e.g., Tier 1 or 2) in effect at that time;
- provide clear and consistent labeling of ENERGY STAR qualified commercial refrigerators and freezers. The ENERGY STAR label must be clearly displayed on the front/inside of the product, on the product packaging, 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;
- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying commercial refrigerators and freezers. Once the Partner submits its first list of ENERGY STAR labeled commercial refrigerator and freezer models, the Partner will be listed as an ENERGY STAR Partner. Partner must provide annual updates in order to remain on the list of participating product manufacturers;
- provide to EPA, on an annual basis, unit shipment data or other market indicators to assist in determining the market penetration of ENERGY STAR. Specifically, Partner must submit the total number of ENERGY STAR qualified commercial refrigerators and freezers shipped (in units by model) or an equivalent measurement as agreed to in advance by EPA and Partner. Partner is also encouraged to provide ENERGY STAR qualified unit shipment data segmented by meaningful product characteristics (e.g., capacity, size, speed, or other as relevant), total unit shipments for each model in its product line, and percent of total unit shipments that qualify as ENERGY STAR. The data for each calendar year should be submitted to EPA, preferably in electronic format, no later than the following March and may be provided directly from the Partner or through a third party. The 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;
- notify EPA of a change in the designated responsible party or contacts for commercial refrigerators and freezers within 30 days.

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:

- consider energy efficiency improvements in company facilities and pursue the ENERGY STAR label for buildings;
- purchase ENERGY STAR labeled 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 labeled product information to employees for use when purchasing products for their homes;
- ensure the power management feature is enabled on all ENERGY STAR qualified monitors 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 labeled product models;
- feature the ENERGY STAR label(s) on Partner Web site and in other promotional materials. If information concerning ENERGY STAR is provided on the Partner Web site as specified by the ENERGY STAR Web Linking Policy (this document can be found in the Partner Resources section on the ENERGY STAR Web site at www.energystar.gov). EPA may provide links where appropriate to the Partner Web site;
- 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, communicate, and/or promote Partner's activities, provide an EPA representative, or include news about the event in the ENERGY STAR newsletter, on the ENERGY STAR Web pages, etc. The plan may be as simple as providing a list of planned activities or planned milestones that Partner would like EPA to be aware of. For example, activities may include: (1) increase the availability of ENERGY STAR labeled products by converting the entire product line within two years to meet ENERGY STAR guidelines; (2) demonstrate the economic and environmental benefits of energy efficiency through special in-store displays twice a year; (3) provide information to users (via the Web site and user's manual) about energy-saving features and operating characteristics of ENERGY STAR qualified products, and (4) build awareness of the ENERGY STAR Partnership and brand identity by collaborating with EPA on one print advertorial and one live press event;
- 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.



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Eligibility Criteria Version 2.0 - DRAFT 1

Below is the **DRAFT 1** Version 2.0 product specification for ENERGY STAR qualified commercial refrigerators and freezers. A product must meet all of the identified criteria if it is to earn the ENERGY STAR.

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

A. Commercial Food-grade Refrigerator: A cabinet designed for storing food products at temperatures above 32 degrees Fahrenheit (F) but no greater than 40 degrees F which is intended for commercial use.

B. Commercial Food-grade Freezer: A cabinet designed for storing food products at temperatures of 0 degrees F or below which is intended for commercial use.

C. Commercial Food-grade Refrigerator-Freezer: A cabinet with two or more compartments, at least one of which is designed for storing food products at temperatures above 32 degrees F but no greater than 40 degrees F and at least one of which is designed for storing food products at temperatures of 0 degrees F or below which is intended for commercial use.

D. Commercial Ice Cream Freezer: A cabinet designed for storing food products at temperatures of -15 degrees F or below which is intended for commercial use.

E. Commercial Refrigeration Cabinet: A refrigerator, freezer, or refrigerator-freezer for storing food products at specified temperatures and designed for use by commercial or institutional facilities, other than laboratory settings.

Note: EPA is considering revising the integrated average product temperature for ice cream freezers to be consistent with Federal regulations (10 CFR 431.64) which require a temperature of -15 degrees F. The existing requirement for ENERGY STAR qualification is -5 degrees F. Therefore, -15 degrees F is added to the ice cream freezer definition above. Details regarding the new test conditions are provided in Section 4, below.

As currently written, this draft specification is intended for commercial food-grade refrigeration equipment only. EPA is currently exploring energy efficiency levels for laboratory-grade refrigeration equipment that will reflect testing at temperatures representative of use in laboratory settings. Manufacturers that sell laboratory grade units are encouraged to participate in this development process. Once these levels are determined, they will be incorporated into the final version of this specification, resulting in a single document that addresses both food-grade and lab-grade equipment with separate energy efficiency criteria for each. Therefore, at this time, laboratory-grade refrigeration equipment cannot qualify for ENERGY STAR.

Stakeholders are encouraged to provide comments as to whether the definitions in Section 1 accurately describe commercial refrigerators and freezers.

F. Self-contained Refrigeration Cabinet: A refrigerator, freezer, or refrigerator-freezer which has the condensing unit built into the cabinet.

G. Closed Refrigerator: A display or holding refrigerator where product is accessible for removal by opening or moving doors or panels.¹

H. Energy Consumption: The energy required to maintain the contents at a specified temperature for a 24-hour period.

I. Integrated Average Product Temperature: The integrated average of all test package temperatures, recorded at 15-minute intervals, as determined using the test method prescribed in Section 4, Test Criteria.

J. ASHRAE: American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc.

K. ARI: Air-Conditioning and Refrigeration Institute.

L. ANSI: American National Standards Institute.

M. AHAM: Association of Home Appliance Manufacturers.

N. Worktop Surface: A solid working surface and backsplash. The working surface may be a cutting board, a stainless steel work surface, or a stone slab. This surface may not add to the total energy consumption of the unit.

O. AHAM Volume: The interior volume of a refrigerator as calculated by AHAM Standard Household Refrigerators/Household Freezers (ANSI/AHAM HRF-1-2004).¹

Note: The ANSI/ASHRAE Standard 72 test procedure references several different approaches to measuring interior cabinet volume including: AHAM volume, load-limit volume, and net useable volume. Under the existing Qualified Product Information (QPI) form, EPA requires interior volume to be measured using ANSI/AHAM HRF-1-2004 (i.e., the AHAM volume). EPA has confirmed with several ENERGY STAR partners that this is the typical way of determining volume. Furthermore, the data, which the proposed requirements in Section 4 below is based on, used the AHAM volume in the calculations. To ensure consistency, EPA is adding the definition for volume above.

2) Qualifying Products: For the purposes of ENERGY STAR, the following types of commercial refrigerators, freezers, and refrigerator-freezers may qualify. **Note:** This specification is intended for commercial food-grade refrigeration equipment only. At this time, laboratory-grade refrigeration equipment cannot qualify for ENERGY STAR.

A. Solid Door Cabinet: An upright commercial, self-contained, food-grade refrigeration cabinet with hinged or sliding, solid doors with or without a worktop surface.

Note: Sliding doors were added to this definition so partners may be able to qualify units with both hinged and sliding doors. It is EPA understanding that sliding door units are tested to the same test procedure and perform the same as hinged door units. Therefore, requirements for sliding, solid door units will be the same as hinged, solid door units. Stakeholders are encouraged to provide feedback on the inclusion of sliding door units.

B. Glass Door Cabinet: An upright commercial, self-contained, food-grade refrigeration cabinet with hinged or sliding, glass doors with or without a worktop surface.

¹ Definitions from ANSI/ASHRAE Standard 72-2005, *Method of Testing Commercial Refrigerators and Freezers*, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 2005.

Note: EPA is proposing to add glass door cabinets to this specification for two reasons: (1) many of these products are sold with solid and glass door options causing confusion in the marketplace if only one option is labeled ENERGY STAR and (2) performance data is available on the California Energy Commission and Consortium for Energy Efficiency product lists to base a specification. Stakeholders are encouraged to comment on whether the definition above is sufficient in describing this product type.

C. Drawer Cabinet: An upright, self-contained, food-grade refrigeration cabinet with one or more sliding drawer compartments with or without a worktop surface.

Note: EPA is proposing to add drawer cabinets to this specification based on increasing manufacturer interest and indications that these products are gaining market share. Please note that the drawer units must have solid door exteriors. Stakeholders are encouraged to provide comments on this description.

- 3) Energy-Efficiency Specifications for Qualifying Products: Only those products listed in Section 2 that also meet the specifications listed in Table 1 below, may qualify as ENERGY STAR. **Note: Products which can operate both as a refrigerator and a freezer must meet all applicable requirements for both product types.**

Table 1: Specifications for ENERGY STAR Qualified Commercial Food-Grade Refrigerators and Freezers				
Product Type	Refrigerator	Freezer	Refrigerator-Freezer	Ice Cream Freezer
Solid Door Cabinet				
$0 < V < 20$	$\leq 0.0806V + 0.8$	$\leq 0.3007V + 0.3$	TBD	TBD
$20 \leq V < 30$	$\leq 0.0886V + 1.3$	$\leq 0.3110V + 0.9$	TBD	TBD
$30 \leq V < 70$	$\leq 0.0984V + 0.4$	$\leq 0.2788V + 1.5$	TBD	TBD
$70 \leq V$	$\leq 0.4V - 24$	$\leq 0.5V - 18.6$	TBD	TBD
Glass Door Cabinet				
$0 < V < 20$	$\leq 0.1445V + 1.4$	$\leq 0.6296V - 3.4$	TBD	TBD
$20 \leq V < 30$	$\leq 0.0844V + 2.3$	TBD	TBD	TBD
$30 \leq V < 70$	$\leq 0.0961V + 2.3$	$\leq 0.6499V - 7.4$	TBD	TBD
$70 \leq V$	$\leq 0.0860V + 2.8$	TBD	TBD	TBD
Drawer Cabinet				
$0 < V < 20$	TBD	TBD	TBD	TBD
$20 \leq V < 30$	TBD	TBD	TBD	TBD
$30 \leq V < 70$	TBD	TBD	TBD	TBD
$70 \leq V$	TBD	TBD	TBD	TBD

Note: V = AHAM volume (see definition in Section 1) in cubic feet (ft³).

Note: The primary objective of ENERGY STAR is to recognize the most energy efficient products in the marketplace. In developing this specification, EPA considers the following criteria:

- Significant energy savings can be realized on a national basis
- Product performance is maintained or enhanced with increased efficiency
- Purchase of high efficiency product will be cost effective
- Energy efficiency can be achieved through several technology options
- Energy consumption and performance can be measured and verified with testing
- Labeling would effectively differentiate products and be visible for purchasers.

Major revisions to the current specification have not been made since it was finalized in 2001. Currently, ENERGY STAR qualified refrigerators and freezers represent 35-44% of the marketplace. EPA expects that this percentage will continue to increase as a result of new federal and state regulations. As of January 1, 2010, current ENERGY STAR levels will be mandatory for all commercial refrigerators and freezers.

It is not EPA's intention to design a specification that will allow every model to qualify. When revising a specification, EPA aims to represent the top 25% of performers in the marketplace. The performance levels proposed in Table 1 represent approximately 25% of models currently available on the market and are based on the following sources: California Energy Commission Appliance Efficiency Database, Consortium for Energy Efficiency Qualified List, and ENERGY STAR Qualifying Product List.

The existing specification established a performance requirement that varied as a function of volume but was based on a single line fit to the efficiency data such that approximately 25% of models overall would qualify. Analysis of our current data set indicates that far fewer than 25% of smaller (and most popular) volume models would qualify under an extension of this approach. Accordingly, in the revised specification, we have divided up the dataset based on volume and are proposing to set efficiency requirements such that roughly 25% of models in each size category qualify. In all cases, this new approach is more stringent than the Version 1.0 ENERGY STAR specification. Please also note that in order for products which can operate both as a refrigerator or a freezer to qualify, they must meet all applicable requirements for both product types. Stakeholders are encouraged to provide comments on these volume guidelines as well as the proposed new levels.

Currently, EPA has little or no data on solid and glass door refrigerator-freezer units, drawer cabinet units, glass door freezers, and ice cream freezers (under the new -15 degree F testing conditions). As a result, performance levels are noted as **TBD**. In order for EPA to be able to include these product types in this specification, a robust data set is needed in order to draw the appropriate specification lines. Stakeholders are encouraged to review ANSI/ASHRAE Standard 72 for these product types and to the extent feasible for this review to include product testing, we encourage manufacturers to submit test results to EPA.

- 4) Test Criteria: Manufacturers are required to perform tests to self-certify those product models that meet the ENERGY STAR guidelines. The test results must be reported to EPA using the Commercial Refrigerator and Freezer Version 2.0 QPI form. In addition to test results, product specification sheets are required for each submission.

In performing the tests, manufacturers must use ANSI/ASHRAE Standard 72-2005, "Method of Testing Commercial Refrigerators and Freezers", to measure the daily energy consumption of commercial refrigerators and freezers with the following temperature specifications:

Product Type:

Commercial food-grade refrigerator cabinet
Commercial food-grade freezer cabinet
Commercial ice cream freezer cabinet

Integrated average product temperature:

38 degrees ± 2 degrees F
0 degrees ± 2 degrees F
-15 degrees ± 2 degrees F

Only those test procedures in ANSI/ASHRAE 72-2005 relevant to closed refrigerators are applicable to this specification.

Note: For Draft 1 of this Version 2.0 specification, EPA is referencing the most recent ASHRAE Standard 72-2005. This ASHRAE Standard supersedes the old ASHRAE Standard (ANSI/ASHRAE 117-2002). Only those sections of the test procedure relevant to closed refrigerators are applicable to this specification. Closed refrigerators are defined in the test procedure as a display or holding refrigerator where product is accessible for removal by opening or moving doors or panels. ANSI/ASHRAE Standard 72-2005 is currently recognized and used by manufacturers. Based on discussions with industry stakeholders, EPA understands that the differences between ANSI/ASHRAE Standards 117-2002 and 72-2005 would not impact energy performance results. EPA would like stakeholder feedback on whether there are any concerns with comparing data between the two test procedures.

EPA is considering adopting the -15 degrees F integrated average product temperature for testing ice cream freezers for ENERGY STAR qualification. The Department of Energy set this -15 degrees F requirement in recent federal regulations (10 CFR 431.64) based on feedback from ARI and other industry stakeholders who state that it better reflects real-world operation of the various types of ice cream equipment. Stakeholders are encouraged to provide feedback on this proposal.

Lastly, EPA is requiring product specification sheets to be attached to QPI forms due to past issues with ineligible products being submitted for qualification.

- 5) Effective Date: The date that manufacturers may begin to qualify products as ENERGY STAR will be defined as the *effective date* of the agreement. Any previously executed agreement on the subject of ENERGY STAR qualified commercial refrigerators and freezers shall be terminated effective **April 30, 2009**.
- A. Qualifying and Labeling Products under Version 2.0: The ENERGY STAR for Commercial Refrigerators and Freezers Specification Version 2.0 shall go into effect on **May 1, 2009**. All products, including models originally qualified under the previous commercial refrigerator and freezer specification, with a date of manufacture on or after May 1, 2009, must meet the new Version 2.0 requirements in order to qualify for ENERGY STAR (including additional manufacturing runs of models originally qualified under the previous specification). 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.

Note: When revising ENERGY STAR specification, EPA typically allows manufacturers 9 months to transition to the new specification requirements. It is EPA's hope that this specification can be finalized prior to September 2008 so that the 2009 National Restaurant Association (NRA) Show may be used to announce this new ENERGY STAR specification. In the case where product categories are eligible for qualification for the first time, such as glass door and drawer cabinets, EPA may decide to allow manufacturers to qualify and promote ENERGY STAR units immediately upon finalization of the specification.

- 6) Future Specification Revisions: ENERGY STAR reserves the right to revise the specifications should technological and/or market changes affect its usefulness to purchasers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through discussions with

industry. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model. To qualify with the energy efficiency criteria of ENERGY STAR, a product model must meet the ENERGY STAR specification in the effect on the date of manufacture.