



ENERGY STAR® Program Requirements for Refrigerated Beverage Vending Machines

Partner Commitments DRAFT 2

Commitment

The following are the terms of the ENERGY STAR Partnership Agreement as it pertains to the manufacturing of ENERGY STAR qualified refrigerated beverage vending machines. 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 refrigerated beverage vending machines and specifying the testing criteria for refrigerated beverage vending machines. 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 logos 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 refrigerated beverage vending machine model within one year of activating the refrigerated beverage vending machine 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 refrigerated beverage vending machines. The ENERGY STAR label must be clearly displayed on the front of the machine or on or next to the nameplate of the machine, 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;

Note: During the Draft 1 comment period, EPA received feedback from industry stakeholders that placing the label on the front of the machine could interfere with the intended marketing presentation of the beverage product and company. EPA continues to believe that visibility of the ENERGY STAR mark on qualifying models is important as it is the primary way to build awareness of ENERGY STAR, which serves to benefit all partners. However, EPA is also willing to work with stakeholders to determine the most appropriate location to place the label while ensuring product identification on site. EPA recognizes that most machine purchases are made without the host site actually seeing the machine, and in that case, the ENERGY STAR mark itself may not sway the purchaser's decision. However, it is important that once the machine is placed on site, the end user that requested an ENERGY STAR qualified machine is assured the energy savings by seeing the label on the actual machine when it is delivered. Therefore, at this time EPA is proposing that if the ENERGY STAR label cannot be placed on the front of the machine, that it be placed on or next to the machine nameplate. EPA may revisit the idea of requiring placement of the ENERGY STAR label on the front of the machine during the Tier II performance level review. Stakeholders are encouraged to provide feedback on this proposed placement of the ENERGY STAR label on qualifying machines.

- provide to EPA, on an annual basis, an updated list of ENERGY STAR qualifying refrigerated

beverage vending machine models. Once the Partner submits its first list of ENERGY STAR qualified refrigerated beverage vending machine 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 refrigerated beverage vending machines 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 percentage 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;

Note: During the review of the Draft 1 stakeholder comments, it was brought to EPA's attention that unit shipment data may not translate into actual market penetration; in many cases, machines are shipped from the manufacturer to the distributor warehouse and not placed on-site until the following year, or even later. In developing this programmatic requirement, EPA weighed several options and the collection of shipment data was the most streamlined approach to determine market penetration across all product categories and various distribution channels. However, as mentioned above, EPA is open to other market indicators to assist in determining the actual market penetration of ENERGY STAR qualified vending machines and will work with the equipment manufacturers to determine what the best option is for that particular distribution channel.

- notify EPA of a change in the designated responsible party or contacts for refrigerated beverage vending machines 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 of the progress of these efforts:

- consider energy efficiency improvements in company facilities and pursue the ENERGY STAR label for buildings;
- 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;
- 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 qualified product models;
- feature the ENERGY STAR 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 qualified 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 DRAFT 2

Below is the **Draft 2** product specification (Version 1.0) for ENERGY STAR qualified refrigerated beverage vending machines. A product must meet all of the identified criteria if it is to be qualified as ENERGY STAR by its manufacturer.

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

- A. **Refrigerated Beverage Vending Machine:** A self-contained system designed to accept consumer payments and dispense bottled and canned beverages at appropriate temperatures without on-site labor intervention.
 - 1. **Indoor Vending Machine:** Machines manufactured for placement inside a building and consequently not subjected to the effects of weathering. These machines models are designated as "For Indoor Use Only" by UL under UL Standard 541 "*Refrigerated Vending Machines*."
 - 2. **Outdoor Vending Machine:** Machines manufactured for placement in open locations and subjected to the full effects of weathering. These machines are designated as "Suitable for Outdoor Use" by UL under UL Standard 541 "*Refrigerated Vending Machines*."
- B. **Low Power Mode:** The reduced power state of a refrigerated beverage vending machine during extended periods of inactivity.
- C. **Standard Product:** The standard product shall be 12 oz (355 ml) cans for machines that are capable of dispensing 12 oz (355 ml) cans. For all other machines, the standard product shall be the product specified by the manufacturer as the standard product¹.
- D. **Vendible Capacity:** The maximum quantity of standard product that can be dispensed from one full loading of the vending machine without further reload operations when used as recommended by the manufacturer².
- E. **ASHRAE:** American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc.
- F. **CSA:** Canadian Standards Association
- G. **UL:** Underwriters Laboratory

Note: EPA received a number of recommendations to adopt the definition for "standard product" provided in the most recent version of the ASHRAE Standard 32.1-1997R. Definitions for indoor and outdoor machines have been adopted from UL Standard 541 "Refrigerated Vending Machines." EPA also received a request to reference ASHRAE Standard 32.1 and the CAN/CSA C804-96 standard for refrigerated beverage vending machines throughout the document, where applicable, and identify these organizations in the Definitions section, above.

¹ ASHRAE Standard 32.1-1997R, *Methods of Testing for Rating Vending Machines for Bottled, Canned, and Other Sealed Beverages*, Section 5, Vending Machine Capacity.

² Ibid.

- 2) **Qualifying Products:** In order to qualify for the ENERGY STAR, a refrigerated beverage vending machine must meet the definition in Section 1A. All qualifying models must also meet the performance requirements provided in Section 3, below, at the time of manufacturing. The following products may qualify under this specification: closed-front, glass front, and live display machine models. **This Version 1.0 specification applies only to new machine models. Requirements for refurbished machines will be determined within one year of the effective date provided in Section 5, below.**

Note: There continues to be concern from many stakeholders that excluding the existing machine inventory from the ENERGY STAR specification could create a sudden demand for new machines that would be challenging to supply, threatening the current balance in the marketplace. According to stakeholders, many of today's existing machine models could be retrofitted with new components to meet the performance requirements of this specification. EPA recognizes the uniqueness of this distribution channel and realizes that including refurbished machines would ensure a greater market penetration of energy-efficient machines and a further reduction of energy usage, which is ultimately the goal of ENERGY STAR. However, there is still work to be done to determine how a retrofit component could be implemented and managed.

EPA is currently working with vending machine manufacturers, beverage companies, bottling companies, and Underwriters Laboratory (UL) to determine the most efficient way to address the installed base of refrigerated beverage vending machines. While it is EPA's intention to move forward with a new machine specification, it is our hope that a Version 1.1 amendment will be developed within the next year that addresses refurbished machines. As such, a placeholder has been inserted in Section 2 above, for a refurbished machine requirement.

- 3) **Energy-Efficiency Specifications for Qualifying Products:** Only those products listed in Section 2 that meet both criteria A and B provided below may qualify as ENERGY STAR.

- A. **Energy Consumption:** Qualifying models shall consume equal to or less energy in a 24-hr period than the values obtained from the equations³, shown below. Effective dates for Tier I and Tier II are provided in Section 5 of this specification.

Tier I

$$Y = 0.55 [8.66 + (0.009 \times C)]$$

Tier II

$$Y = 0.45 [8.66 + (0.009 \times C)]$$

Where:

Y = 24 hr energy consumption (kWh/day) after the machine has stabilized

C = vendible capacity

Example: Under Tier I, a 650-can capacity machine may consume no more than 7.9805, or 7.98 kWh/day (rounded). Under Tier II, a 650-can may consume no more than 6.5295 or 6.53 kWh/day (rounded).

Note: Approximately one year before Tier II becomes effective, EPA will reassess the performance level presented in this specification to ensure its feasibility in the marketplace.

³ The energy consumption equation is based on CAN/CSA C804-96 *Energy Performance of Vending Machines* (for Machine Type A).

Note: EPA received comments regarding the multiple tier format presented in the Draft 1 specification. EPA's intent in using a tiered approach is to give manufacturers an opportunity to qualify existing products while also providing a road map for future design of new products to meet the Tier II requirements. EPA has successfully used this tiered approach in a number of product specifications. However, there have also been instances where the ENERGY STAR Tier II requirements were not appropriate based on the marketplace, product availability, and technological advances. In these cases, EPA revisited the Tier II requirements to determine a more appropriate level or time frame to ensure that product would be available once the tier went into effect. Similarly, EPA will revisit the refrigerated beverage vending machine specification one year prior to the Tier II effective date to determine whether or not it is feasible.

B. Low Power Mode: In addition to meeting the 24-hour energy consumption requirements in Section 3A, qualifying models shall come equipped with hard wired controls and/or software capable of automatically placing the machine into a low power mode during periods of extended inactivity while still connected to its power source to facilitate the saving of additional energy, where appropriate. The machine shall be capable of operating in each of the low power mode states described below:

1. Lighting low power state – lights off for an extended period of time.
2. Refrigeration low power state – the average beverage temperature is allowed to rise above 40°F for an extended period of time.
3. Whole machine low power state – the lights are off and the refrigeration operates in its low power state.

In addition, the machine shall be capable of automatically returning itself back to its normal operating conditions at the conclusion of the inactivity period. The low power mode-related controls/software shall be capable of on-site adjustments by the vending operator or machine owner.

Note: EPA's goal in including these low power mode requirements is to ensure that existing machine software capabilities are available and may be used to their fullest potential based on the individual requirements of the host site. However, machines that are vending temperature sensitive product, such as milk, must not have the refrigeration low power state enabled on site by the vending operator or machine owner due to the risk of product spoilage.

Note: Recognizing that each site has unique operating conditions, EPA is not requiring manufacturers to pre-set the low power mode features to specific set points prior to shipping. While neither EPA nor the machine manufacturer can control whether or not these software controls are used once the machine is placed on site, the low power mode requirement proposed in this Draft 2 specification ensures that the operator and host site are at least presented with this option. In addition, there are cases where enabling of refrigeration low power modes is not appropriate, such as when a machine is vending temperature sensitive product, such as milk. However, it is also difficult to predict whether a machine currently vending milk will, in the future, vend a less temperature sensitive product such as soda. Therefore, all ENERGY STAR qualified refrigerated beverage vending machines must have the low power mode capabilities listed above to ensure the possibility of additional energy savings throughout the life of the machine. It is EPA's hope that through operator training and outreach to the host sites, these controls will be properly used to maximize energy savings without interfering with product sales or product freshness.

- 4) Test Criteria: Manufacturers are required to perform tests, according to the requirements included in this Version 1.0 specification, then submit qualifying model information to EPA for approval.

- A. In performing these tests, partner agrees to measure a model's daily energy consumption according to ASHRAE Standard 32.1-1997R, *Methods of Testing for Rating Vending Machines for Bottled, Canned, and Other Sealed Beverages*, using the test conditions provided in Section 6 of the standard:
1. Machines designated as "Suitable for Outdoor Use" by UL must be tested at 90 ± 2 °F (32.2 ± 1 °C); $65 \pm 5\%$ relative humidity; and 36 ± 1 °F (2.2 ± 0.5 °C) beverage temperature throughout the test.
 2. Machines designated as "For Indoor Use Only" by UL may be tested at 75 ± 2 °F (23.9 ± 1 °C); $45 \pm 5\%$ relative humidity; and 36 ± 1 °F (2.2 ± 0.5 °C) beverage temperature throughout the test.
- B. Test results must be reported to EPA using the Refrigerated Beverage Vending Machine Qualifying Product Information (QPI) form.

Note: It is EPA's understanding that the revision of ASHRAE Standard 32.1-1997 is near completion. As such, the latest version (1997R) is referenced in the Test Criteria section above and the energy consumption test criteria adopted for purposes of qualifying machines under this specification. EPA also recognizes that most, if not all, glass front machines are designed for indoor use only and therefore, should be tested under operating conditions other than 90 ± 2 °F (32.2 ± 1 °C) and $65 \pm 5\%$ relative humidity. Therefore, models that are UL listed as "For Indoor Use Only" may be tested according to the alternative criteria set forth in the ASHRAE Standard 32.1-1997R [75 ± 2 °F (23.9 ± 1 °C) and $45 \pm 5\%$ relative humidity] to qualify as ENERGY STAR. Please note that indoor models must meet the same minimum performance requirements as outdoor machines, provided in Section 3 of this specification.

Once ASHRAE Standard 32.1-1997R is finalized, EPA will review its requirements and update the reference in this specification, as appropriate.

- 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.
- A. **Tier I** – The first phase, Tier I, shall go into effect on **January 1, 2004** and conclude on **December 31, 2006**. Upon signing the agreement, the Partner may begin to use the ENERGY STAR on qualifying product models and related marketing materials. Refer to the ENERGY STAR Identity Guidelines at www.energystar.gov/partners.
- B. **Tier II** – The second phase of this specification, Tier II, shall commence on **January 1, 2007**. All products, including models originally qualified under Tier I, with a **date of manufacture** on or after **January 1, 2007**, must meet Tier II requirements in order to bear the ENERGY STAR on the product or in product literature.

Note: EPA had hoped to announce the ENERGY STAR vending machine Version 1.0 specification at the NAMA Expo in October 2003. However, based on the volume of comments received on the Draft 1 version, additional time was needed to review, research, and address a number of outstanding issues prior to finalizing the document. Based on additional discussions with industry stakeholders, EPA now hopes that this Draft 2 version addresses industry stakeholders concerns and represents a fair, yet challenging, specification. EPA's intent is to finalize this Version 1.0 document by the end of this year (2003) and announce the Refrigerated Beverage Vending Machine specification January 1, 2004.

Furthermore, in response to manufacturer concerns that the two-year lead-time between Tier I and Tier II in Draft 1 was too short, EPA has extended this time period to three years. Two years from the January 1, 2004 effective date, EPA will revisit the Tier II requirements and determine whether or not the proposed performance requirements are feasible prior to Tier II taking effect.

To meet a January 1, 2004 date, stakeholders are asked to submit any final comments or suggestions to EPA for consideration by November 21, 2003.

- 6) Future Specification Revisions: ENERGY STAR 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.** To carry the ENERGY STAR label, a product model must 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 by which a unit is considered to be completely assembled.