



ENERGY STAR® Program Requirements for Refrigerated Beverage Vending Machines

Eligibility Criteria

Below is the 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, canned, and other sealed beverages at appropriate temperatures without on-site labor intervention.
 1. **Indoor Vending Machine:** A machine intended for placement inside a building and not subjected to the effects of weathering. These machines are marked "For Indoor Use Only" in accordance with UL Standard 541 "*Refrigerated Vending Machines.*"
 2. **Outdoor Vending Machine:** A machine intended for placement outdoors and subjected to the full effects of weathering. These machines are marked "Suitable for Outdoor Use" or "Suitable for Protected Locations" in accordance with 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 Standard 541:** UL Safety Standard for Refrigerated Vending Machines.
- 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. This Version 1.0 specification applies to new machine models and machines in the field that are identical to the models that are ENERGY STAR qualified as new machines. The ENERGY STAR label may be affixed to those qualified field machines once the qualifying product information is posted on the ENERGY STAR Web site. **The ENERGY STAR Remanufactured Vending Machine specification shall commence on a date to be determined through industry discussions regarding the administration and implementation of this program.**

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.

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.

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.

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.

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

- 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 marked "For Indoor Use Only" must be tested at 75 ± 2 °F (23.9 ± 1 °C); $45\pm 5\%$ relative humidity; and 36 ± 1 °F (2.2 ± 0.5 °C) average beverage temperature throughout the test.
 2. Machines marked "Suitable for Outdoor Use" or "Suitable For Protected Locations" 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) average beverage temperature throughout the test.
- B. Test results must be reported to EPA using the Refrigerated Beverage Vending Machine Qualifying Product Information (QPI) form.
- 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 **April 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.
- 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.

Glass Front Machines: Approximately one year after the Tier I effective date, EPA will review glass front machine data to ensure that the Tier I performance level continues to provide differentiation in the marketplace as this product category begins to expand.