



# ENERGY STAR® Program Requirements Product Specification for Refrigerated Beverage Vending Machines

## Eligibility Criteria Version 3.0: DRAFT 1

Following is the **Draft 1** Version 3.0 product specification for ENERGY STAR qualified refrigerated beverage vending machines. A product must meet all of the identified criteria if it is to earn the ENERGY STAR.

**Note:** The purpose of this specification revision is to harmonize with the definitions, metrics, and test procedure established in the U.S. Department of Energy (DOE) Final Rule for Refrigerated Bottled or Can Beverage Vending Machines (Federal Register, FR 74 44914, August 31, 2009, Subpart Q of 10 CFR Part 431) and to ensure that ENERGY STAR maintains relevance in the marketplace by making more stringent qualification criteria. EPA's goal is to finalize and release a final Version 3.0 specification in the first quarter of 2012 to align with the DOE August 31, 2012 standards compliance date. Given this pending standard, EPA is focusing efforts on harmonizing with DOE and determining new ENERGY STAR performance levels, in addition to any needed clarifications. However, stakeholders are encouraged to provide recommendations to EPA in other areas to consider under subsequent revisions.

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

- A. **Refrigerated Beverage Vending Machine:** A commercial refrigerator that cools bottled or canned beverages and dispenses the bottled or canned beverages on payment. *Bottled or canned beverages* are defined as "within a sealed container."
  - a. **Class A Machine:** A refrigerated bottled or canned beverage vending machine that is fully cooled, and is not a combination vending machine.
  - b. **Class B Machine:** Any refrigerated bottled or canned beverage vending machine not considered to be Class A, and is not a combination vending machine.
  - c. **Combination Machine:** A refrigerated bottled or canned beverage vending machine that also has non-refrigerated volumes for the purpose of vending other, non-"sealed beverage" merchandise.
- B. **Rebuilt Refrigerated Beverage Vending Machine:** A UL Listed or Classified refrigerated beverage vending machine that has been previously in use and subjected to various degrees of retrofitting, remanufacturing, refurbishing, repairing, or reconditioning for resale or reuse. For purposes of ENERGY STAR qualification, rebuilt model shall include the machine and energy efficiency components or kit installed to meet ENERGY STAR requirements.
- C. **Rebuilding Kit:** A combination of components that may be installed in a previously used vending machine at a refurbishment center.
- D. **Basic Model<sup>1</sup>:** All units of a given type of covered product (or class thereof) manufactured by one manufacturer, having the same primary energy source, and which have essentially identical electrical, physical, and functional characteristics that affect energy consumption or energy efficiency.
- E. **Low Power Mode:** The reduced power state of a refrigerated beverage vending machine during extended periods of inactivity.

<sup>1</sup> 10 CFR 431.292 of Subpart Q.

- F. OEM: Original Equipment Manufacturer.
- G. Qualified component supplier (QCS): A company that produces components and/or rebuilding kits for vending machines.
- H. Refurbishment Center (RC): A facility equipped to rebuild vending machines.

**Note:** The definitions for refrigerated beverage vending machine and machine subcategories have been revised to harmonize with the DOE minimum standards (Section 10 CFR 431.292, Subpart Q). EPA is also adopting the DOE Basic Model approach for testing representative models and has added the definition presented in §431.292. Definitions for standard product and vendible capacity have been removed but will be provided via the ENERGY STAR qualified product submittal form. EPA's intends to continue collecting and posting vendible capacity data on the Qualified Product List because of its importance in comparing machine production capabilities. Stakeholders are encouraged to comment on the definitions proposed above and whether additional terms need to be defined for further clarification.

## 2) Scope:

- A. Included Products: Products that meet the definition of a Refrigerated Beverage Vending Machine as specified herein are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.B.
- B. Excluded Products: Combination Vending Machines are not eligible for ENERGY STAR.

**Note:** As with the current Version 2.1 specification, combination machines are not eligible to be labeled under this specification. EPA has received some concern regarding the labeling of machines that offer multiple configurations, including non-beverage options. Stakeholders are encouraged to provide comments on how EPA should address multiple configuration machines in this Version 3.0 specification.

## 3) Qualification Criteria:

- A. Maximum Daily Energy Consumption (MDEC): To qualify for ENERGY STAR, refrigerated beverage vending machines shall consume equal to or less than the MDEC values obtained using the equations below:
  - a. Class A – New and Remanufactured Machines: **TBD**
  - b. Class B – New and Remanufactured Machines:  **$0.0584V + 2.53$**

Where,  $V$  = the refrigerated volume (ft<sup>3</sup>) of the refrigerated bottled or canned beverage vending machine, as measured by the American National Standards Institute (ANSI)/Association of Home Appliance Manufacturers (AHAM) HRF-1-2004, "Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers."

**Note:** EPA has spent the last several months compiling and analyzing performance data on new machine designs, submitted by manufacturers and reported on the ENERGY STAR Qualified Product List, to determine potential levels that would result in meaningful energy savings above the DOE energy conservation standards (See §431.296).

Based on EPA's dataset, there appears to be sufficient differentiation among models defined as Machine Type B beyond the minimum standard level. Based on further analysis of the data, EPA is proposing a level for Machine Type B that is approximately 20% more stringent than the pending minimum efficiency standard. Interested stakeholders can view EPA's data analysis on the ENERGY STAR specification development website.

**Note cont.**

Remanufactured beverage vending machines are not covered by the DOE's appliance standards program. EPA intends to continue covering remanufactured machines under the Version 3.0 specification. Some stakeholders have suggested that EPA set more stringent levels for *new* Machine Type B models and align the remanufactured level with the DOE minimum standard. EPA is inclined to continue requiring the same performance levels for new and remanufactured machines because: (1) ENERGY STAR qualified remanufactured data seems to suggest that efficiencies well above the current level are achievable using current machine-component combinations; and (2) the end user is unable to decipher between a new and remanufactured machine when placed on-site. It is important to EPA that this specification provides a balance between providing the appropriate incentives to manufacturers and bottlers to upgrade existing stock as well as to manufacturers of highly efficient new machines.

Stakeholders are encouraged to provide comments and supporting data on EPA's proposed Machine Type B level for new and remanufactured machines.

**Machine Type A:** At this time, a new ENERGY STAR level for Machine Type A is not being proposed. In reviewing our limited data set, EPA does not immediately see the same opportunity for additional energy savings over standard models. Specifically, the Agency questions if significant savings can be realized above the DOE minimum level, and if adequate selection would be available in the marketplace under the new ENERGY STAR level. Therefore, EPA is including a placeholder for this product category until more information can be reviewed. Stakeholders are encouraged to provide additional data and/or comments on whether a new ENERGY STAR level could be determined for Machine Type A designs, both new and remanufactured, that would reward innovative designs, result in significant energy savings, and ensure product availability and selection.

- 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 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.
- a. The machine shall be capable of operating in at least one 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 to 40°F or higher 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.
  - b. Machine shall be capable of returning itself back to its normal operating conditions at the conclusion of the inactivity period.
  - c. The low power mode-related controls/software shall be capable of on-site adjustment by the vending operator or machine owner unless the low power controlling device is already pre-programmed when installed into the machine.

While only one of the above low power mode states is required, EPA encourages new machine manufacturers to continue to include all of the low power mode options in equipment designs and partners that are rebuilding machines to seek out new technologies that might help to achieve this goal as well.

EPA encourages partners to train vending machine installers to provide information to host sites on the low power mode capabilities of their machines so that these capabilities may be enabled as desired by the host site.

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, shall not have the refrigeration low power state enabled on site by the vending operator or machine owner due to the risk of product spoilage.

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 three significant digits.
- b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact values without any benefit from rounding.

**4) Test Requirements:**

- A. One of the following sampling plans shall be used to test energy performance for qualification to ENERGY STAR:
  - a. A representative unit shall be selected for testing based on the definition for Basic Model provided in Section 1, above; or
  - b. Units shall be selected for testing per the sampling requirements defined in 10 CFR §429.52.
- B. When testing refrigerated beverage vending machines, the following test methods shall be used to determine ENERGY STAR qualification:

<b>ENERGY STAR Requirement</b>	<b>Test Method Reference</b>
MDEC	10 CFR Part 431 Subpart Q, 10 CFR Part 431.294

**Note:** For purposes of testing, representative models must meet the Basic Model definition provided in Section 1, above. EPA has also revised the test method reference in Table 1 to align with the DOE test procedures.

**5) Effective Date:** This ENERGY STAR Product Specification for Refrigerated Beverage Vending Machines shall take effect on **August 31, 2012**. 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 on which a unit is considered to be completely assembled.

**Note:** The August 31, 2012 effective date proposed above aligns with the compliance date for DOE's energy conservation standards. Stakeholders are encouraged to provide comments on the proposed effective date. All refrigerated beverage vending machines, including those models qualified under Version 2.1, will be required to be third-party certified to this new Version 3.0 specification by an EPA-recognized Certification Body to be qualified as ENERGY STAR. EPA expects that for most manufacturers this will not result in retesting if: (1) the currently qualified machine meets the new Version 3.0 requirements; (2) this machine has been tested under the conditions outlined by DOE; and (3) the testing entity meets the requirements of the ENERGY STAR third party certification program. More information on the third party certification program can be found on the ENERGY STAR website at: [www.energystar.gov/3rdpartycert](http://www.energystar.gov/3rdpartycert).

**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 stakeholder 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.