



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

## Eligibility Criteria Version 3.0: FINAL DRAFT

Following is the **Final Draft** 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.

- 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.
  - 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.

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

## 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, as defined in Section 1 above, are not eligible for ENERGY STAR.

**Note:** Combination machines continue to be excluded in this Final Draft proposal. As noted in previous drafts, the ASHRAE 32.1 test method is only intended to evaluate energy efficiency performance of Vending Machines for Bottled, Canned, and Other Sealed Beverages. Due to concerns specific to the lack of an appropriate test method for combination machines and knowledge of several instances where combination machines using snack only configurations carry the ENERGY STAR label, causing confusion and potentially unfair advantage in the marketplace, EPA is continuing to explicitly exclude combination machines within the program scope.

EPA is interested in exploring options for addressing these machine types within ENERGY STAR as part of a future revision to this specification or the development of separate performance requirements. So, following the release of the Final Version 3.0 specification, EPA will launch a scoping effort to better understand the marketplace, technologies, and testing challenges for potential ENERGY STAR recognition.

## 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:  $0.0523V + 2.432$
  - b. Class B – New and Remanufactured Machines:  $0.0657V + 2.844$

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:** In general, stakeholder comments support the Class B MDEC level proposed in the previous Draft 2 specification, which offers the end user 10% in energy savings above the U.S. Department of Energy (DOE) standard. Therefore, EPA has retained the MDEC level for this Final Draft proposal.

Although stakeholders remain concerned about the proposed Class A MDEC level, EPA believes that the proposal as written (5% more stringent than DOE) is the only alternative to excluding this product type from the ENERGY STAR program.

Throughout this revision process industry stakeholders have discussed the challenges of moving to natural refrigerants and their inability to compete with the energy efficiencies displayed by more conventional refrigerant designs (i.e., HFCs). As explained in the previous Draft 2, EPA applauds industry-wide efforts to move toward natural refrigerants, which supports EPA's overall mission to reduce greenhouse gas emissions. However, as a symbol of the highest efficiency products on the market, ENERGY STAR cannot represent models that deliver minimum accepted efficiency performance. While there may be few machines that qualify initially, the Agency feels that maintaining the ENERGY STAR program remains an important incentive for greater efficiency, particularly for remanufactured machines, which are not subject to DOE standards.

Originally this revision was set to take effect in August 2012, to harmonize with the date by which the DOE standard takes effect. EPA is now proposing an effective date of February 2013 in consideration of these product transitions.

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 (unrounded) values. Only the final result of a calculation shall be rounded.
- b. Unless otherwise specified, compliance with specification limit shall be evaluated using exact values without any benefit from rounding.
- c. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to three significant digits.

#### 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 |

- 5) **Effective Date:** This ENERGY STAR Product Specification for Refrigerated Beverage Vending Machines shall take effect on **February 1, 2013**. 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:** In response to stakeholder concerns regarding the August 31, 2012 effective date proposed in the Draft 2, EPA has moved this date to February 1, 2013. However, as of August 31, 2012 EPA will ask Certification Bodies to cease granting ENERGY STAR qualification to new machine submittals under the existing Version 2.1 specification. At that time, all new product submittals must meet the new Version 3.0 requirements to be ENERGY STAR qualified. Starting February 1, 2013 any vending machine that does not meet the Version 3.0 specification will be dropped from the ENERGY STAR Qualified Product List.

- 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.