

Appliance Standards Awareness Project  
Natural Resources Defense Council

June 18, 2021

Dr. Stephanie Johnson  
U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Building Technologies Office, EE-5B  
1000 Independence Avenue SW  
Washington, DC 20585

**RE: Docket Number EERE–2021–BT–TP–0007/RIN 1904–AE67: Request for Information for Test Procedures for Refrigerated Bottled or Canned Beverage Vending Machines**

Dear Dr. Johnson:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP) and Natural Resources Defense Council (NRDC) on the request for information (RFI) for test procedures for refrigerated bottled or canned beverage vending machines (BVMs). 86 Fed. Reg. 27054 (May 19, 2021). We appreciate the opportunity to provide input to the Department.

**We support DOE updating the current BVM test procedure to incorporate by reference ANSI/ASHRAE Standard 32.1-2017 with some caveats.** DOE explains in the RFI that since the publication of the 2015 test procedure, a new version of ANSI/ASHRAE Standard 32.1 has been published; many of the revisions harmonize with the existing DOE test procedure, but there are also a number of differences. While we support incorporating by reference ANSI/ASHRAE Standard 32.1-2017, DOE should include provisions for testing low power modes and the energy consumption of payment mechanisms to ensure a representative energy consumption measurement. In addition, to provide clarity and consistency across test labs, DOE should maintain the provisions in the current DOE test procedure addressing energy-saving features that cannot be disabled and equipment accessories as well as the rounding instructions. We have outlined these recommendations below:

- **Low power modes:** DOE should maintain provisions for capturing low power modes. While the current DOE test procedure incorporates accessory and refrigeration low power modes, ANSI/ASHRAE Standard 32.1-2017 specifically prohibits operation in low-power mode during testing.<sup>1</sup> Continuing to capture low power modes in the DOE test procedure can incentivize manufacturers to integrate more energy management controls to reduce energy consumption. For refrigeration low power mode, we encourage DOE to include a direct physical test instead of a fixed credit, as is currently specified in the DOE test procedure. The 3% credit that is currently specified may be inhibiting further improvement in refrigeration low power mode technology by failing to differentiate among control strategies. We understand that the existing test for accessory low power mode could potentially be expanded to capture additional low power modes such as refrigeration low power mode (with the inclusion of a recovery period).

---

<sup>1</sup> ANSI/ASHRAE Standard 32.1-2017, p. 6.

- Payment mechanisms: DOE should include a direct test of the energy use of payment mechanisms in the test procedure. ANSI/ASHRAE Standard 32.1-2017 includes instructions to disconnect payment mechanisms during testing,<sup>2</sup> which does not allow for the energy use of the payment mechanism to be accounted for in the total energy consumption. The current DOE test procedure specifies a default payment mechanism energy use of 0.2 kWh/day;<sup>3</sup> however, individual payment mechanism energy use can vary significantly, and 0.2 kWh/day may not be representative of the market today. For this reason, the energy use of the payment mechanism should be directly tested and incorporated into the overall energy consumption measurement, which would improve representativeness. We understand that BVMs are typically shipped with a payment mechanism. In the case where DOE finds that some BVMs are shipped without a payment mechanism, we believe it would make sense to specify for these models a default value that represents the most energy-consuming payment mechanism.
- Energy-saving features: DOE should maintain the provision in the current test procedure addressing energy-saving features that cannot be disabled. While ANSI/ASHRAE Standard 32.1-2017 requires that energy management systems be disabled, it does not provide instructions for energy-saving features that cannot be disabled.<sup>4</sup> Maintaining the existing specifications in the DOE test procedure for this scenario will help provide consistency during testing across different machines.
- Equipment accessories: We support DOE maintaining the setup instructions for equipment accessories as outlined in the current test procedure. The current test procedure provides setup instructions for a variety of equipment accessories, but ANSI/ASHRAE Standard 32.1-2017 only provides instructions for a select few of these accessories.<sup>5</sup> Maintaining the current setup instructions will help provide clarity for lab technicians and consistency across test labs.
- Rounding instructions: We recommend maintaining the rounding instructions in the current test procedure. While the current DOE test procedure contains rounding instructions on energy consumption results, ANSI/ASHRAE Standard 32.1-2017 does not provide such instructions. Including these instructions will provide clarity for test labs when obtaining energy consumption measurements.

**We encourage DOE to consider requiring a load in the non-refrigerated compartments of combination BVMs.** DOE explains in the RFI that both the current DOE test procedure and ANSI/ASHRAE Standard 32.1-2017 specify that the non-refrigerated compartments of combination BVMs not be loaded. DOE further explains that the lack of thermal mass in these compartments may affect measured energy consumption.<sup>6</sup> We encourage DOE to investigate the typical thermal mass of merchandise loaded in the non-refrigerated compartment of combination BVMs and the impact of including such a load on measured energy consumption. Including a load in non-refrigerated compartments would likely provide a more representative energy consumption measurement for combination BVMs.

---

<sup>2</sup> ANSI/ASHRAE Standard 32.1-2017, p. 4.

<sup>3</sup> 86 Fed. Reg. 27059.

<sup>4</sup> 86 Fed. Reg. 27057.

<sup>5</sup> Ibid.

<sup>6</sup> 86 Fed. Reg. 27058.

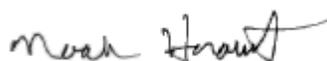
**We encourage DOE to investigate and capture the energy use associated with connected functions.** DOE explains in the RFI that the current DOE test procedure requires components not necessary for the functionality of the BVM to be de-energized during testing.<sup>7</sup> Similarly, in ANSI/ASHRAE Standard 32.1-2017, all accessories that are nonessential to the basic functionality of the machine in the field are required to be disabled.<sup>8</sup> We understand that these may include connected functions that impact the overall energy use of a BVM. We encourage DOE to investigate and capture the energy use associated with connected functions that would otherwise be de-energized during testing.

Thank you for considering these comments.

Sincerely,



Kanchan Swaroop  
Technical Advocacy Associate  
Appliance Standards Awareness Project



Noah Horowitz  
Director - Center for Energy Efficiency Standards  
Natural Resources Defense Council

---

<sup>7</sup> 86 Fed. Reg. 27061.

<sup>8</sup> ANSI/ASHRAE Standard 32.1-2017, p. 4.