Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
Natural Resources Defense Council

August 10, 2020

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–2020–BT–STD–0014/RIN 1904–AE68: Request for Information for Energy Conservation Standards for Refrigerated Bottled or Canned Beverage Vending Machines

Dear Dr. Johnson:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), and Natural Resources Defense Council (NRDC) on the request for information (RFI) for energy conservation standards for refrigerated bottled or canned beverage vending machines. 85 Fed. Reg. 35394 (June 10, 2020). We appreciate the opportunity to provide input to the Department.

DOE should conduct a full analysis to evaluate potential amended standards for beverage vending machines. In the RFI, DOE seeks information to determine whether the agency should propose a "no-new-standard" determination.[1] However, available data suggests that there is clear potential for large reductions in the energy use of beverage vending machines. As shown in Figures 1 and 2 below, there are a wide range of beverage vending machine models available today that consume significantly less energy than the current DOE standards.[2] The most efficient Class A machine consumes 18% less energy than a standard level beverage vending machine, and the most efficient Class B machine consumes 30% less energy than the standard level.[3] Overall, an average Class B machine consumes 16% less energy than the current standards. Furthermore, many of the machines on the market exceed the current ENERGY STAR levels as well.[4] Because higher efficiency models are available on the market today, we recommend DOE consider improved standards for maximum daily energy consumption.

[1] 85 Fed. Reg. 35394.
[2] Models in the DOE Compliance Certification Database (CCD) as of 7/21/20.
[3] Class A machines refer to beverage vending machines that are not combination vending machines and in which 25 percent or more of the surface area of the front side of the machine is transparent. Class B machines are any beverage vending machines that are not considered to be Class A and are not combination vending machines.
[4] https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Refrigerated%20Beverage%20Vending%20Machines%20Version%204.0%20Final_2.pdf. p. 6.

Figure 1. Daily energy consumption of Class A beverage vending machines

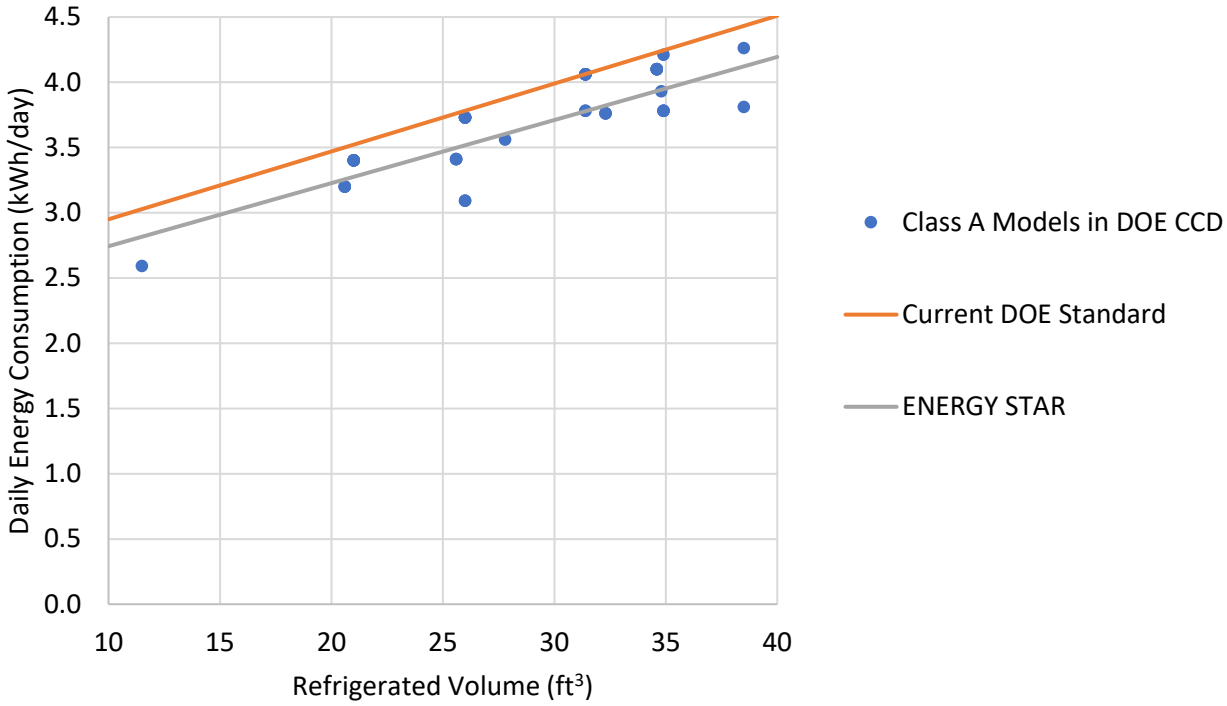


Figure 2. Daily energy consumption of Class B beverage vending machines

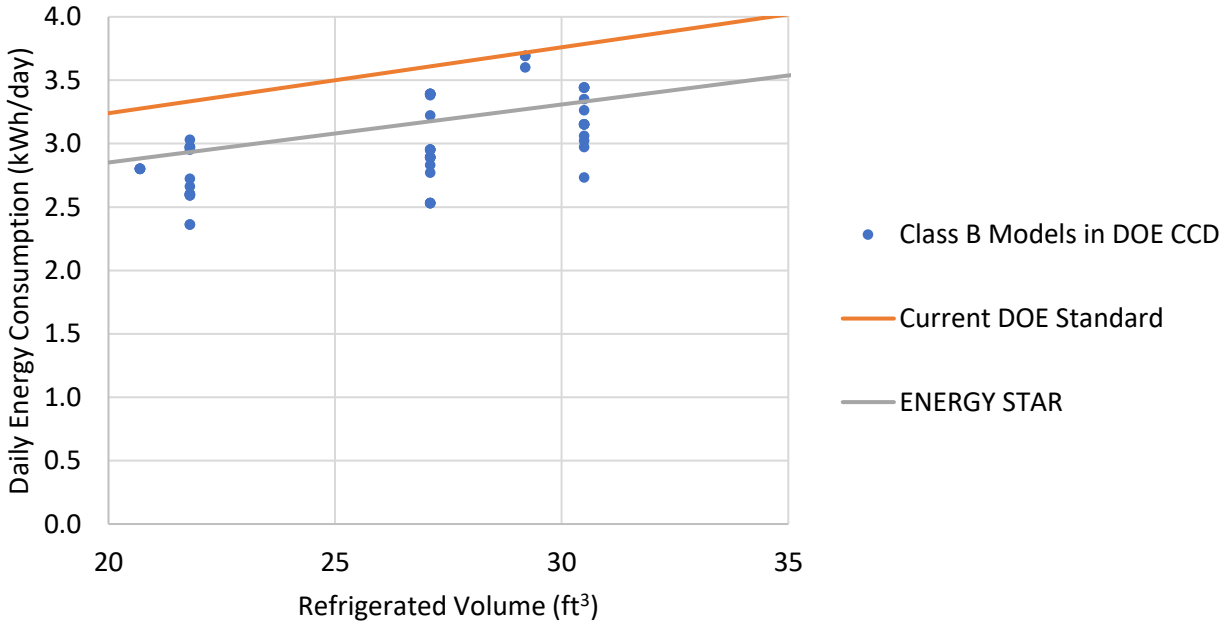


Table 1 below shows the energy savings at the max-tech levels evaluated for the 2016 final rule relative to the standard levels adopted.[5] The potential per-unit energy savings are 35% and 43% for Class A and Class B machines, respectively. Furthermore, there are large additional potential savings beyond the

[5] https://www.regulations.gov/document?D=EERE-2013-BT-STD-0022-0067. p. 10B-2. Table 10B.2.2.

max-tech efficiency levels evaluated for the 2016 final rule since the analysis for that rule did not include propane or variable-speed compressors as technology options. While the max-tech levels in the 2016 final rule reflected achievable efficiencies using CO_2, DOE determined that propane compressors consume 23% less energy than CO_2 compressors.[6] Variable-speed compressors can provide significant savings by reducing cycling losses and improving heat exchanger effectiveness.[7] A DOE analysis of potential energy savings from high-efficiency electric motors found that applying variable frequency drives to compressors in beverage vending machines could reduce site energy consumption by 15%.[8]

Table 1. Energy Savings of the Max-Tech Levels in the 2016 Final Rule Relative to the Standard Levels Adopted

Equipment Class	% Savings
Class A	35%
Class B	43%
Combo A	41%
Combo B	42%

DOE should treat refrigerants that can improve equipment efficiency as a technology option. In the 2016 final rule, DOE evaluated efficiency levels, including the max-tech levels, that could be met with either CO_2 or propane as the refrigerant. However, as noted above, propane compressors can reduce energy consumption by 23% relative to CO_2. As we described in our comments on the 2015 NOPR, since CO_2 is less efficient than propane, by separately analyzing beverage vending machines using propane and CO_2 rather than treating propane as a technology option, DOE's analysis for the last rulemaking overestimated the cost to a large portion of customers and to manufacturers of various potential standard levels.[9] While some manufacturers may choose to use CO_2, DOE's analysis should reflect the least-cost way to meet a given efficiency level, which in this case would include the use of propane.

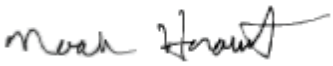
Thank you for considering these comments.

Sincerely,

Kanchan Swaroop
Technical Advocacy Associate
Appliance Standards Awareness Project

Christopher Perry, PE
Research Manager, Buildings Program
American Council for an Energy Efficient Economy

[6] Ibid. p. 5-25.
[7] Ibid. p. 3-18.
[8] http://energy.gov/sites/prod/files/2014/02/f8/Motor%20Energy%20Savings%20Potential%20Report%202013-12- 4.pdf. pp. 55-56.
[9] https://www.regulations.gov/document?D=EERE-2013-BT-STD-0022-0056.



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