DEPARTMENT OF ENERGY

10 CFR Part 431

[EERE–2021–BT–TP–0007]

RIN 1904–AE67

Energy Conservation Program: Test Procedure for Refrigerated Bottled or Canned Beverage Vending Machines

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of proposed rulemaking and announcement of public meeting.

SUMMARY: The U.S. Department of Energy (''DOE'') proposes to amend the test procedures for refrigerated bottled or canned beverage vending machines (''BVMs'') to reference the latest version of the industry standard. DOE also proposes to provide setup instructions for non-beverage shelves, update the lowest application product temperature definition and instructions, require testing of coin and bill payment mechanisms if shipped with the BVM (but not until the compliance date of any amended energy conservation standards), specify setup instructions for leak mitigation controls, and remove an obsolete version of the test procedure. DOE is seeking comment from interested parties on the proposal.

DATES: DOE will accept comments, data, and information regarding this proposal no later than May 31, 2022. See section V, ''Public Participation,'' for details. DOE will hold a webinar on Monday, May 2, 2022, from 1:00 p.m. to 4:00 p.m. See section V, ''Public Participation,'' for webinar registration information, participant instructions, and information about the capabilities available to webinar participants. If no participants register for the webinar, it will be cancelled.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov,* under docket number EERE–2021–BT–TP–0007. Alternatively, interested persons may submit comments by email to *BVM2021TP0007@ee.doe.gov.* Include docket number EERE–2021–BT–TP–0007 in the subject line of the message. No telefacsimiles (''faxes'') will be accepted. For detailed instructions on submitting comments and additional information on this process, see section V of this document.

Although DOE has routinely accepted public comment submissions through a variety of mechanisms, including postal mail and hand delivery/courier, the Department has found it necessary to make temporary modifications to the comment submission process in light of the ongoing COVID–19 pandemic. DOE is currently suspending receipt of public comments via postal mail and hand delivery/courier. If a commenter finds that this change poses an undue hardship, please contact Appliance Standards Program staff at (202) 586–1445 to discuss the need for alternative arrangements. Once the COVID–19 pandemic health emergency is resolved, DOE anticipates resuming all of its regular options for public comment submission, including postal mail and hand delivery/courier.

Docket: The docket, which includes **Federal Register** notices, public meeting attendee lists and transcripts (if a public meeting is held), comments, and other supporting documents/materials, is available for review at *www.regulations.gov.* All documents in the docket are listed in the *www.regulations.gov* index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket web page can be found at *www.regulations.gov/docket/EERE–2021–BT–TP–0007.* The docket web page contains instructions on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through *www.regulations.gov.*

FOR FURTHER INFORMATION CONTACT:

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For further information on how to submit a comment, review other public comments and the docket, or participate in a public meeting (if one is held), contact the Appliance and Equipment Standards Program staff at (202) 287–1445 or by *email: ApplianceStandardsQuestions@ee.doe.gov.*

SUPPLEMENTARY INFORMATION: DOE proposes to maintain a previously approved incorporation by reference and to incorporate by reference the following industry standards into 10 CFR part 431:

American National Standards Institute (''ANSI'')/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (''ASHRAE'') Standard 32.1, (''ANSI/ASHRAE Standard 32.1–2017''), ''Methods of Testing Rating Refrigerated Vending Machines for Sealed Beverages'';

ANSI/Association of Home Appliance Manufacturers (''AHAM'') Standard HRF–1, (''ANSI/AHAM HRF–1–2008''), ''Energy And Internal Volume Of Refrigerating Appliances''.

Copies of ANSI/ASHRAE Standard 32.1–2017 can be purchased from ASHRAE's bookstore at *webstore.ansi.org.* Copies of ANSI/AHAM HRF–1–2008 can be purchased at *webstore.ansi.org/standards/aham/ahamhrf2008.*

For a further discussion of these standards, see section IV.M of this document.

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I. Authority and Background

DOE is authorized to establish and amend energy conservation standards and test procedures for Refrigerated Bottled or Canned Beverage Vending Machines (''BVMs''). (42 U.S.C. 6295(v); 42 U.S.C. 6293(b)(15)) DOE's energy conservation standards and test procedures for Refrigerated Bottled or Canned Beverage Vending Machines (''BVMs'') are currently prescribed at subpart Q of part 431 of title 10 of the Code of Federal Regulations (''CFR''). The following sections discuss DOE's authority to establish test procedures for BVMs and relevant background information regarding DOE's consideration of test procedures for this product.

A. Authority

The Energy Policy and Conservation Act, as amended (''EPCA''),[1] authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B [2] of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency. These products include BVMs, the subject of this document. (42 U.S.C. 6295(v)) [3]

The energy conservation program under EPCA consists essentially of four parts: (1) Testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA specifically include definitions (42 U.S.C. 6291), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), energy conservation standards (42 U.S.C. 6295), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

The Federal testing requirements consist of test procedures that manufacturers of covered products must use as the basis for: (1) Certifying to DOE that their products comply with the applicable energy conservation standards adopted pursuant to EPCA (42 U.S.C. 6295(s)), and (2) making representations about the efficiency of those consumer products (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the products comply with relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy conservation testing, labeling, and standards. (42 U.S.C. 6297(a)–(c)) DOE may, however, grant waivers of Federal preemption for particular State laws or regulations, in accordance with the procedures and other provisions of EPCA. (42 U.S.C. 6297(d))

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, EPCA requires that DOE amend its test procedures for all covered products to integrate measures of standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A)) Standby mode and off mode energy consumption must be incorporated into the overall energy efficiency, energy consumption, or other energy descriptor for each covered product unless the current test procedures already account for and incorporate standby and off mode energy consumption or such integration is technically infeasible. If an integrated test procedure is technically infeasible, DOE must prescribe a separate standby mode and off mode energy use test procedure for the covered product, if technically feasible. (42 U.S.C. 6295(gg)(2)(A)(ii)) Any such amendment must consider the most current versions of the International Electrotechnical Commission (''IEC'') Standard 62301 [4] and IEC Standard 62087 [5] as applicable. (42 U.S.C. 6295(gg)(2)(A))

With respect to BVMs, EPCA requires the test procedure to be based on the 2004 version of ANSI/ASHRAE Standard 32.1, ''Methods of Testing for Rating Vending Machines for Bottled, Canned or Other Sealed Beverages.'' (42 U.S.C. 6293(b)(15))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including BVMs, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6293(b)(1)(A))

If the Secretary determines, on her own behalf or in response to a petition by any interested person, that a test procedure should be prescribed or amended, the Secretary shall promptly publish in the **Federal Register** proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedures. The comment period on a proposed rule to amend a test procedure shall be at least 60 days and may not exceed 270 days. In prescribing or amending a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2)) If DOE determines that test procedure revisions are not appropriate, DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6293(b)(1)(A)(ii))

[1] All references to EPCA in this document refer to the statute as amended through the Infrastructure Investment and Jobs Act, Public Law 117–58 (Nov. 15, 2021).

[2] For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

[3] Because Congress included BVMs in Part A of Title III of EPCA, the consumer product provisions of Part A (rather than the industrial equipment provisions of Part A–1) apply to BVMs. DOE placed the regulatory requirements specific to BVMs in 10 CFR part 431, ''Energy Efficiency Program for Certain Commercial and Industrial Equipment'' as a matter of administrative convenience based on their type and will refer to BVMs as ''equipment'' throughout this document because of their placement in 10 CFR part 431. Despite the placement of BVMs in 10 CFR part 431, the relevant provisions of Title A of EPCA and 10 CFR part 430, which are applicable to all product types specified in Title A of EPCA, are applicable to BVMs. *See* 74 FR 44914, 44917 (Aug. 31, 2009) and 80 FR 45758, 45759 (Jul. 31, 2015). The regulatory provisions of 10 CFR 430.33 and 430.34 and subparts D and E of 10 CFR part 430 are applicable to BVMs. Because the procedures in 10 CFR parts 430 and 431 for petitioning DOE for obtaining a test procedure waiver are substantively the same (79 FR 26591, 26601 (May 9, 2014)), the regulations for applying for a test procedure waiver for BVMs are those found at 10 CFR 431.401 rather than those found at 10 CFR 430.27.

[4] IEC 62301, *Household electrical appliances—Measurement of standby power* (Edition 2.0, 2011–01).

[5] IEC 62087, *Methods of measurement for the power consumption of audio, video, and related equipment* (Edition 3.0, 2011–04).

DOE is publishing this notice of proposed rulemaking (''NOPR'') in satisfaction of the 7-year review requirement specified in EPCA. (42 U.S.C. 6293(b)(1)(A))

B. Background

DOE's existing test procedures for BVMs appear at 10 CFR part 431, subpart Q, appendix A and appendix B, both titled ''Uniform Test Method for the Measurement of Energy Consumption of Refrigerated Bottled or Canned Beverage Vending Machines'' (''appendix A'' and ''appendix B'', respectively). On or after January 8, 2019, any representations, including compliance certifications, made with respect to the energy use or efficiency of BVMs must be made in accordance with the results of testing pursuant to appendix B.

On July 31, 2015, DOE published a test procedure final rule (''July 2015 Final Rule'') that referenced updated industry test methods, improved clarity of the procedure, accounted for new equipment features, and established the test procedures at appendix A and appendix B.[6] 80 FR 45758; *See also* 81 FR 1028 (January 8, 2016). The specific amendments in the July 2015 Final Rule included, for both appendix A and appendix B: (1) Updating the referenced test method to ANSI/ASHRAE Standard 32.1–2010, ''Methods of Testing for Rating Vending Machines for Sealed Beverages,'' (''ANSI/ASHRAE Standard 32.1–2010''), (2) incorporating amendments to clarify several ambiguities in ANSI/ASHRAE Standard 32.1–2010, (3) eliminating the requirement to test at the 90-degree Fahrenheit (''°F'') ambient test condition, (4) clarifying the test procedure for combination vending machines, (5) clarifying the requirements for loading of BVMs under the DOE test procedure, (6) specifying the characteristics of a standard test package, (7) clarifying the average next-to-vend beverage temperature test condition, (8) specifying placement of thermocouples during the DOE test procedure, (9) establishing provisions for testing at the lowest application product temperature, (10) clarifying the treatment of certain accessories during the DOE test procedure, and (11) clarifying the certification and reporting requirements for covered BVMs. 80 FR 45758, 45760. The July 2015 Final Rule also incorporated amendments in appendix B to account for the impact of low-power modes on the measured daily energy consumption (''DEC'') of BVMs. *Id.*

On May 19, 2021, DOE published in the **Federal Register** an early assessment request for information (''May 2021 RFI'') seeking comments on the existing DOE test procedure for BVMs. 86 FR 27054. In the May 2021 RFI, DOE requested comments, information, and data regarding a number of issues, including (1) scope and definitions, (2) test procedure setup and conditions, (3) updates to industry standards, (4) low power modes and recovery periods, (5) alternate refrigerants, (6) payment mechanisms, and (7) connected functions.

DOE received comments in response to the May 2021 RFI from the interested parties listed in Table I.1.

TABLE I.1—WRITTEN COMMENTS RECEIVED IN RESPONSE TO MAY 2021 RFI

Commenter(s)	Reference in this NOPR	Commenter type
CoilPod LLC	CoilPod	Component/Material Supplier.
Appliance Standards Awareness Project, Natural Resources Defense Council	ASAP and NRDC	Efficiency Organizations.
Pacific Gas and Electric Company, Southern California Edison, and San Diego Gas & Electric; collectively, the California Investor-Owned Utilities.	CA IOUs	Utility Association.
Northwest Energy Efficiency Alliance, Northwest Power and Conservation Council	NEEA and NPCC	Efficiency Organizations.
National Automatic Merchandising Association	NAMA	Trade Association.

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.[7]

C. Deviation From the Process Rule

In accordance with section 3(a) of part 430, subpart C, appendix A (''Appendix A''), DOE notes that it is deviating from the provision in appendix A regarding publication of further opportunity to comment following an early assessment RFI prior to a NOPR to amend the test procedure. Section 8(b) of appendix A; 10 CFR 431.4. DOE is opting to deviate from this step because in the May 2021 RFI DOE already requested and received information on the topics addressed in DOE's proposal. DOE has tentatively determined the proposals do not require an additional pre-NOPR opportunity for public comment.

II. Synopsis of the Notice of Proposed Rulemaking

In this NOPR, DOE proposes to update the test procedure at appendix B as follows:

(1) Incorporate by reference the current industry standard ANSI/ASHRAE Standard 32.1–2017.

(2) Incorporate by reference the industry standard ANSI/AHAM HRF–1–2008 referenced in ANSI/ASHRAE Standard 32.1–2017.

(3) Maintain the existing DOE test procedure requirements that are not included in ANSI/ASHRAE Standard 32.1–2017.

(4) Provide setup instructions for non-beverage shelves in refrigerated compartments.

(5) Amend the definition of lowest application product temperature (''LAPT'') to allow for testing BVMs only capable of operating at temperatures below the specified test temperature.

(6) Require testing of coin and bill payment mechanisms if shipped with the BVM (but not until the compliance date of any amended energy conservation standards).

(7) Specify setup instructions for leak mitigation controls consistent with the existing test procedure instructions.

(8) Remove the obsolete test procedure in appendix A.

DOE's proposed actions are summarized in Table II.1 compared to the current test procedure as well as the reason for the proposed change.

[6] As discussed further in this section, the test procedure at appendix B accounts for additional BVM operating modes not accounted for in appendix A and is mandatory for demonstrating compliance with the energy conservation standards in 10 CFR 431.296(b), which are required for BVMs manufactured on or after January 8, 2019.

[7] The parenthetical reference provides a reference for information located in the docket of DOE's rulemaking to develop test procedures for BVMs. (Docket No. EERE–2021–BT–TP–0007, which is maintained at *www.regulations.gov*). The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

TABLE II.1—SUMMARY OF CHANGES IN PROPOSED TEST PROCEDURE RELATIVE TO CURRENT TEST PROCEDURE

Current DOE test procedure	Proposed test procedure	Attribution
Incorporates by reference ANSI/ASHRAE Standard 32.1–2010.	Incorporates by reference ANSI/ASHRAE Standard 32.1–2017.	Reference most recent industry test method.
Refers to Appendix C of ANSI/ASHRAE Standard 32.1–2010, which references ANSI/AHAM HRF–1–2004, for measurement of refrigerated volume.	Incorporates by reference ANSI/AHAM HRF–1–2008 for measurement of refrigerated volume, as referenced in Appendix C of ANSI/ASHRAE Standard 32.1–2017.	Incorporate by reference industry test method required for testing.
Does not specifically address loading of non-beverage merchandise shelves within the refrigerated compartment.	Specifies that non-beverage merchandise shelves within the refrigerated compartment are unloaded for testing.	Improve representativeness and reproducibility.
Defines LAPT only for units that operate at temperatures above the test condition.	Adds a definition for LAPT and test instructions for units that can only operate below the test condition.	Improve representativeness and reproducibility.
Payment mechanisms are de-energized for testing; energy calculations include a representative daily energy consumption adder for payment mechanisms.	Requires coin and bill payment mechanisms to be energized and tested upon the compliance date of any amended energy conservation standards.	Improve representativeness.
Generally requires components necessary for primary functionality to be energized and those not necessary for primary functionality to be de-energized for testing.	Specifies that leak mitigation controls would be energized or de-energized for testing depending on whether they are necessary for primary functionality of the BVM.	Improves representativeness.
Includes appendix B required for testing current BVMs and appendix A which is now obsolete.	Removes obsolete appendix A	Improves readability.

DOE has tentatively determined that the proposed amendments described in section III of this NOPR would not alter the measured efficiency of BVMs or require retesting or recertification solely as a result of DOE's adoption of the proposed amendments to the test procedures, if made final. The proposed amendment to require coin and bill payment mechanisms to be energized during testing would not be required until the compliance date of any amended energy conservation standards for BVMs that account for the measurement of the coin and bill payment mechanism energy, should such standards be adopted. Additionally, DOE has tentatively determined that the proposed amendments, if made final, would not increase the cost of testing. Discussion of DOE's proposed actions are addressed in detail in section III of this NOPR.

III. Discussion

A. Scope and Definitions

BVMs are commercial refrigerators (as defined at 10 CFR 431.62 [8]) that cool bottled or canned beverages and dispense the bottled or canned beverages on payment. 10 CFR 431.292. The defined equipment classes for BVMs include Class A, Class B, Combination A, and Combination B.

Class A means a BVM that is not a combination vending machine and in which 25 percent or more of the surface area on the front side of the beverage vending machine is transparent.

Class B means a BVM that is not considered to be Class A and is not a combination vending machine.

Combination A means a combination vending machine where 25 percent or more of the surface area on the front side of the beverage vending machine is transparent.[9]

Combination B means a combination vending machine that is not considered to be Combination A.

Combination vending machine means a BVM containing two or more compartments separated by a solid partition, that may or may not share a product delivery chute, in which at least one compartment is designed to be refrigerated, as demonstrated by the presence of temperature controls, and at least one compartment is not. 10 CFR 431.292.

In the May 2021 RFI, DOE requested comment on several topics regarding scope and definitions. 86 FR 27054, 27056. DOE requested comment on whether it should define ''dispense'' to better differentiate between BVMs and other commercial refrigerators as defined in 10 CFR 431.62. *Id.* DOE also requested comment on the distinction between refrigerated and non-refrigerated compartments and whether the term ''solid partition'' in the definition of combination vending machines needs further specificity. *Id.* Regarding equipment classes, DOE requested comment on whether any additional clarifications are needed for the existing BVM equipment class definitions, or if there are any categories within the current classes that would require additional test provisions. *Id.*

DOE received no comment on these issues in response to the May 2021 RFI. Additionally, DOE has not identified BVMs available on the market that would require additional specificity in the existing BVM definitions. Therefore, DOE has tentatively determined that amendments are not required and is not proposing any new or amended BVM definitions in this NOPR.

B. Updates to Industry Standards

DOE's BVM test procedure in appendix B incorporates by reference ANSI/ASHRAE Standard 32.1–2010, which was the most current version of the industry standard available at the time of the July 2015 Final Rule. 80 FR 45758, 45762. DOE specifically references section 3, ''Definitions''; section 4, ''Instruments''; section 5, ''Vendible Capacity''; section 6, ''Test Conditions''; section 7.1, ''Test Procedures—General Requirements''; and section 7.2, ''Energy Consumption Test'' of ANSI/ASHRAE Standard 32.1–2010. Appendix B includes certain exceptions to these references, and in cases of conflict between appendix B language and the requirements of ANSI/ASHRAE Standard 32.1–2010, the language in appendix B takes precedence. See section 1 of appendix B.

[8] As defined in 10 CFR 431.62, c*ommercial refrigerator* means a unit of commercial refrigeration equipment in which all refrigerated compartments in the unit are capable of operating at or above 32 °F (±2 °F).

[9] As provided in 10 CFR 429.134(j)(2), the determination of percent transparent surface does not include the surface area surrounding any compartments that are not designed to be refrigerated (as demonstrated by the presence of temperature controls), whether or not it is transparent.

At the time of the July 2015 Final Rule analysis, DOE was aware of ongoing industry meetings to consider updates to ASHRAE Standard 32.1. DOE participated in those industry meetings and, to the extent possible, sought to align its test procedure with the expected updates to ASHRAE 32.1. 80 FR 45758, 45762.

On February 2, 2017, ANSI and ASHRAE approved the latest version of Standard 32.1, ANSI/ASHRAE 32.1–2017, ''Methods of Testing for Rating Vending Machines for Sealed Beverages,'' (''ANSI/ASHRAE Standard 32.1–2017'').

Many of the revisions included in ANSI/ASHRAE Standard 32.1–2017 harmonize the industry standard with the existing DOE test procedure. However, some substantive differences between DOE's test procedure at appendix B and ANSI/ASHRAE Standard 32.1–2017 remain, notably the following:

(1) Section 2.2.4 of appendix B contains provisions for testing accessory low power mode, and section 2.3.2 of appendix B accounts for refrigeration low power mode; whereas ANSI/ASHRAE Standard 32.1–2017 contains no such provisions (and specifically prohibits operation in low-power mode during testing, per section 7.2.2.6.2). See section III.B.6 of this NOPR for additional discussion of low power modes.

(2) Section 2.1.3 of appendix B provides instructions for testing BVMs that are not capable of maintaining an integrated average temperature of 36 °F ± 1 °F during the 24-hour test period; whereas ANSI/ASHRAE Standard 32.1–2017 contains no such provisions. See section II.B.4 of this NOPR for additional discussion of lowest application product temperatures.

(3) Section 2.2.1.4 of appendix B specifies a ''standard product'' consisting of standard 12-ounce aluminum beverage cans filled with a liquid with a density of 1.0 grams per milliliter (''g/mL'') ± 0.1 g/mL at 36 °F; whereas ANSI/ASHRAE Standard 32.1–2017 specifies using a 33 percent propylene glycol and 67 percent water solution. See section II.B.3 for additional discussion of standard product characteristics.

(4) Section 2.2.5.1 of appendix B provides instructions for payment mechanisms that cannot be disconnected during testing (if the payment mechanism is not removed, appendix B requires it to be in place but de-energized, or set to the lowest energy consuming state if it cannot be de-energized) and specifies a default payment mechanism energy consumption of 0.20 kWh/day; whereas ANSI/ASHRAE Standard 32.1–2017 contains no such provisions. See section II.B.5 for additional discussion of payment mechanisms.

(5) Section 2.2.3 of appendix B requires energy management systems to be disabled and energy-saving features that cannot be disabled to be set to their most energy-consuming settings; whereas ANSI/ASHRAE Standard 32.1–2017 also requires that energy management systems be disabled, but does not address other energy-saving features that cannot be disabled.

(6) Sections 2.2.5.2 through 2.2.5.10 of appendix B provide additional setup instructions regarding certain equipment accessories (*i.e.,* internal lighting; external customer display signs, lights, and digital screens; anti-sweat or other electric resistance heaters; condensate pan heaters and pumps; illuminated temperature displays; condensate filters; security covers; general purpose outlets; and crankcase heaters and other electric resistance heaters for cold weather); whereas ANSI/ASHRAE Standard 32.1–2017 provides instructions for only a subset of these accessories (*i.e.,* video screens and lighting).

(7) Section 2.2.2 of appendix B prohibits routing thermocouple wires and other measuring equipment through the dispensing door; whereas ANSI/ASHRAE Standard 32.1–2017 contains no such prohibition (only that they be installed in a manner that does not affect energy performance).

(8) Section 2.3.3 of appendix B provides rounding instructions on energy consumption results; whereas ANSI/ASHRAE Standard 32.1–2017 contains no such rounding instructions.

(9) ANSI/ASHRAE Standard 32.1–2017 provides an additional recovery test (to determine the product temperature recovery time of the BVM when loaded with product at a certain temperature) and a vend test (to determine how much cold product a BVM will deliver when bottles, cans, or other sealed packages are vended at a rate of two per minute, 3 hours after a half-full machine is refilled with product at a specified beverage temperature); whereas appendix B contains no such tests. These tests assess product temperature recovery and vending performance but do not factor into the energy use measurement in ANSI/ASHRAE Standard 32.1–2017.

In addition to the differences with the DOE test procedure, ANSI/ASHRAE Standard 32.1–2017 also lists key changes from the 2010 version, summarized by the following:

- Updates definitions to specify the application to BVMs;
- Removes zone-cooled/fully cooled distinction;
- Updates AHAM HRF–1 reference to a more recent version of the standard (2008);
- Removes the 90 °F test condition for ambient temperature and maintains a single ambient temperature (75 °F);
- Clarifies test setup requirements for temperature sensor locations and test package/wire setup;
- Incorporates requirements for the controls systems; and
- Clarifies the integrated average temperature (''IAT'') calculation.

In the May 2021 RFI, DOE requested comment on whether it should update its test procedure to incorporate by reference ANSI/ASHRAE Standard 32.1–2017 and whether any of the updates included would affect measured energy consumption. 86 FR 27054, 27057. Additionally, DOE requested comment on the differences between the current DOE test procedure and ANSI/ASHRAE Standard 32.1–2017, and whether there are any known deficiencies in ANSI/ASHRAE Standard 32.1–2017 that DOE should consider addressing in the future. *Id.*

ASAP and NRDC and the CA IOUs commented in support of updating the current DOE test procedure to incorporate by reference ANSI/ASHRAE Standard 32.1–2017. (ASAP and NRDC, No. 4, p.1; CA IOUs, No. 6, p.2)

ASAP and NRDC, NEEA and NPCC, and the CA IOUs recommended that DOE maintain provisions for low power mode testing, which are not included in ANSI/ASHRAE Standard 32.1–2017. (ASAP and NRDC, No. 4, p. 1; NEEA and NPCC, No.7, p.3; CA IOUs No. 6, p.2) ASAP and NRDC commented that these test provisions can incentivize manufacturers to incorporate more energy management controls to reduce energy consumption. (ASAP and NRDC, No. 4, p.1) ASAP and NRDC also commented that DOE should maintain the current test procedure provision to address energy saving features that cannot be disabled, which is not included in ANSI/ASHRAE Standard 32.1–2017, to help maintain consistency for testing across different machines. (ASAP and NRDC, No. 4, p. 2) NEEA and NPCC further recommended that DOE should maintain the requirement that energy saving features be enabled during testing. (NEEA and NPCC, No.7 p.3)

ASAP and NRDC, as well as NEEA and NPCC, recommended that DOE should continue to account for payment mechanism energy consumption, which is not included in ANSI/ASHRAE

Standard 32.1–2017. (ASAP and NRDC, No. 4, p.2; NEEA and NPCC, No. 7, p. 3)

Additionally, ASAP and NRDC, as well as NEEA and NPCC, supported maintaining existing accessory equipment setup instructions not included in ANSI/ASHRAE Standard 32.1–2017 to help provide clarity for lab technicians and consistency across test labs. (ASAP and NRDC, No. 4, p. 2; NEEA and NPCC, No. 7, p.3)

ASAP and NRDC, as well as NEEA and NPCC, also recommend maintaining the rounding instructions currently in the DOE test procedure (for energy consumption results) because ASHRAE Standard 32.1–2017 does not contain such instructions. (ASAP and NRDC, No. 4, p. 2; NEEA and NPCC, No. 7, p.3)

The CA IOUs also commented that they believe the ANSI/ASHRAE Standard 32.1–2017 specifications on contents of the test containers will result in higher reproducibility and should be adopted for the DOE test procedure. (CA IOUs, No. 6, p. 2)

DOE considered the comments received in response to the May 2021 RFI and proposes to incorporate by reference the most recent updated industry standard ANSI/ASHRAE Standard 32.1–2017, while maintaining the current DOE test procedure provisions not included in ANSI/ASHRAE Standard 32.1–2017 regarding energy management systems, accessory setup instructions, wire routing, and rounding. This proposed approach is consistent with the recommendations from interested parties. DOE has tentatively determined that this proposal would not impact current BVM ratings or test costs because the proposed test procedure is substantively the same as the current DOE test procedure.

The other topics raised in comments from interested parties or noted as differences between ANSI/ASHRAE Standard 32.1–2017 and the current DOE test procedure (*i.e.,* characteristics of the standard product, lowest application product temperature, payment mechanisms, low-power modes, and additional operating modes) are discussed in detail in subsequent sections of this NOPR.

As discussed earlier in this section, Appendix C of ANSI/ASHRAE Standard 32.1–2017 refers to the 2008 version of ANSI/AHAM Standard HRF–1 ''Energy, Performance and Capacity of Household Refrigerators, Refrigerator-Freezers and Freezers'' (''ANSI/AHAM HRF–1–2008'') for measuring the refrigerated volume of BVMs. The current DOE test procedure, by reference to ANSI/ASHRAE Standard 32.1–2010, refers to the 2004 version of ANSI/AHAM Standard HRF–1 (''ANSI/AHAM HRF–1–2004'') for measuring BVM refrigerated volume. For consistency with the proposed incorporation by reference of ANSI/ASHRAE Standard 32.1–2017, DOE is also proposing to incorporate by reference ANSI/AHAM HRF–1–2008 to ensure that BVM testing is conducted to the appropriate test standard. DOE has determined that the updates made to ANSI/AHAM HRF–1 between the 2004 and 2008 versions provide clarifications and instructions for measuring components that are specific to consumer refrigeration products (*e.g.,* consideration of through-the-door ice and water dispensers) and that current refrigerated volume measurements and ratings for BVMs would be unchanged under the proposed updated industry standard reference.

DOE requests comment on its proposal to incorporate by reference the most current industry test standard, ANSI/ASHRAE Standard 32.1–2017, including the updated reference to ANSI/AHAM HRF–1–2008 for measuring refrigerated volume. Specifically, DOE requests comment on whether the proposed amendments would affect BVM ratings as measured under the existing test procedure or whether they would impact test burden.

C. Test Procedure

In the May 2021 RFI, DOE specifically asked for comment on the following topics: Ambient test conditions, test procedure for combination BVMs, characteristics of the standard product, lowest application product temperature, payment mechanisms, low power modes, reloading and recovery periods, alternate refrigerants, and connected functions. 86 FR 27054, 27057–27061. The following sections summarize the comments received on these topics DOE's responses, and any corresponding proposed amendments to the DOE test procedure.

1. Ambient Test Conditions

Section 2.1.2 of appendix B requires testing and rating BVM performance in a 75 °F ambient temperature with a 45 percent relative humidity. Prior to the July 2015 Final Rule, the DOE test procedure incorporated by reference ANSI/ASHRAE Standard 32.1–2004, which included two ambient test conditions: 75 °F with a 45 percent relative humidity and 90 °F with a 65 percent relative humidity. However, compliance with DOE's energy conservation standard was determined based on performance at only the 75 °F with a 45 percent relative humidity test condition. In the July 2015 Final Rule, DOE determined that the 75 °F with a 45 percent relative humidity test condition provides a reasonable and comparable representation of energy performance for all BVMs and removed the 90 °F with a 65 percent relative humidity condition. 80 FR 45758, 45765.

During the rulemaking leading to the July 2015 Final Rule, DOE estimated that 18 percent of Class B and Combination B BVMs are installed outdoors. 80 FR 45758, 45765. DOE determined that, although these BVMs would experience different ambient conditions than in the test procedure, it would not be feasible to test at all the conditions BVMs may experience in the field. *Id.* In ANSI/ASHRAE Standard 32.1–2017, the 90 °F with a 65 percent relative humidity test condition for the energy consumption test was removed, and the industry test standard designated the 75 °F with a 45 percent relative humidity test condition as the singular test condition.

If certain BVMs are specifically designed to operate in unique ambient conditions (*i.e.,* are intended for use only in the unique condition and are not optionally installed indoors, as are most BVMs), testing at a different ambient condition may better represent average energy use in the field.

In the May 2021 RFI, DOE requested comment on the number of BVMs that operate outdoors or in other unique environments that might differ from the single specified test condition. 86 FR 27054, 27058. DOE also requested information on how to identify and define outdoor BVMs, appropriate test methods to represent their energy consumption, and the costs associated with those methods. *Id.*

DOE did not receive any comments on these topics in response to the May 2021 RFI. While acknowledging that BVMs may be installed and operated in a variety of locations and ambient conditions, DOE has tentatively determined that the existing single test condition provides a representative test condition for BVMs, consistent with the July 2015 Final Rule determination. DOE does not propose any changes to the current requirement to test under the single ambient test condition (75 °F and 45 percent relative humidity), consistent with the test condition specified in ASHRAE Standard 32.1–2017.

2. Test Procedure for Combination BVMs

As described in section III.A, DOE defines ''combination BVM'' as a BVM containing two or more compartments separated by a solid partition, that may

or may not share a product delivery chute, in which at least one compartment is designed to be refrigerated, as demonstrated by the presence of temperature controls, and at least one compartment is not. 10 CFR 431.292. The thermal mass of items loaded into the non-refrigerated compartments (or lack of thermal mass for unloaded compartments) may affect the measured DEC of combination BVMs. Section 2.2.1.3 of appendix B specifies that the non-refrigerated compartments of combination BVMs must not be loaded with any standard products or other vendible merchandise during testing. Sections 7.2.2.2 and 7.2.2.7 of ANSI/ASHRAE Standard 32.1–2017 require combination BVMs not to be loaded with any standard products, test packages, or other vendible merchandise in the non-refrigerated compartments.

The thermal mass of items loaded into the non-refrigerated compartments (or lack of thermal mass for unloaded compartments) may affect the measured DEC of combination BVMs. In the May 2021 RFI, DOE sought feedback on whether requiring some load in the non-refrigerated compartment would better represent the average energy use of combination BVMs. 86 FR 27054, 27058. DOE also requested comment on the typical thermal mass of merchandise loaded into the non-refrigerated compartments of combination BVMs and the potential impact of such a load on tested energy consumption. *Id.*

ASAP and NRDC encouraged DOE to consider requiring a load in the non-refrigerated compartments, after investigating the typical thermal mass loaded, to provide a more representative energy consumption measurement. (ASAP and NRDC, No. 4, p. 2)

DOE did not receive comments in response to the May 2021 RFI regarding the typical thermal mass of loads in the non-refrigerated compartments on combination BVMs. Based on a review of the market, typical loads for non-refrigerated compartments can range from small items with density similar to beverages (*e.g.,* chocolate bars), to larger low-density items (*e.g.,* bags of chips). Given the wide range of products stored in non-refrigerated compartments, DOE has not identified a typical representative load for these compartments. Additionally, DOE acknowledges that loading non-refrigerated compartments in a consistent, repeatable manner may be difficult due to the range of shelf configurations in those compartments. DOE did not identify a standard package that could be consistently loaded into non-refrigerated shelves for testing. Requiring such a load would introduce additional test burden compared to the existing unloaded approach.

DOE has tentatively determined that the current test procedure provides a representative, repeatable, and reproducible approach for testing combination BVMs while minimizing test burden. Accordingly, DOE is not proposing to require a load in non-refrigerated compartments.

DOE continues to request information on typical loads for non-refrigerated compartments in combination BVMs and, if DOE were to require such loads for testing, the potential impacts on combination BVM energy consumption and test burden.

3. Characteristics of the Standard Product

Section 2.2.1.4 of appendix B specifies the standard products to be used for testing, which include the following: 12-ounce aluminum beverage cans filled with a liquid with a density of 1.0 grams per milliliter (''g/mL'') ±0.1 g/mL at 36 °F; or, for product storage racks that are not capable of vending 12-ounce cans, but are capable of vending 20-ounce bottles, 20-ounce plastic bottles filled with a liquid with a density of 1.0 g/mL ±0.1 g/mL at 36 °F; or, for product storage racks that are not capable of vending 12-ounce cans or 20-ounce bottles, the packaging and contents specified by the manufacturer in product literature as the standard product (*i.e.,* the specific merchandise the refrigerated bottled or canned beverage vending machine is designed to vend).

In the July 2015 Final Rule, DOE discussed the possibility of considering other standard products, including slimline cans, milk cartons, aseptic packs, pouches, and energy drinks. 80 FR 45758, 45768. These potential alternative standard products all hold liquids and otherwise would allow for testing following the current BVM test procedure instructions. However, DOE determined that the standard product for BVMs not capable of vending 12-ounce cans or 20-ounce bottles is the product specified by the manufacturer in product literature. *Id.*

In the May 2021 RFI, DOE requested comment on whether the standard products as currently defined (*i.e.,* the products comprising the BVM test load) are representative of average BVM use and if any additional products should be defined as standard products to limit variability in testing. 86 FR 27054, 27058. Additionally, DOE requested detailed descriptions of any such products and what the appropriate method of loading would be for BVMs designed to dispense merchandise other than the standard products. 86 FR 27054, 27058–27059.

DOE did not receive comment on these topics in response to the May 2021 RFI and proposes to maintain the current test procedure standard packages of 12-ounce cans, 20-ounce bottles, or the packaging and contents specified by the manufacturer in product literature, depending on the BVM vending capability.

Additionally, DOE stated in the May 2021 RFI that certain BVMs are marketed to vend both beverages and food, but do not contain a solid partition that separates the shelves or compartments intended for refrigerated bottled or canned beverages from those intended for other merchandise. 86 FR 27054, 27058. If the non-beverage shelves of these BVMs are not capable of vending 12-ounce cans or 20-ounce bottles, the standard product for testing is the packaging and contents specified by the manufacturer in product literature as the standard product per section 2.2.1.4 of appendix B. *Id.*

For non-beverage shelves, manufacturers do not always specify the packaging and contents of the merchandise to be loaded. Additionally, measuring temperature at the center of mass of non-liquid merchandise packaging would provide unique challenges compared to liquid containers (*e.g.,* measuring the center of mass of a bag of chips).

Similar to the discussion regarding non-refrigerated compartments in combination BVMs in section III.C.2 of this document, DOE has tentatively determined that it cannot identify a representative non-beverage test load because of the wide range of merchandise that could be loaded in non-beverage shelves. Additionally, DOE expects that measuring the temperatures of non-beverage standard packages would be difficult to do repeatably and reproducibly (*i.e.,* measuring the temperature in food packaging rather than in a liquid) and would increase test burden. To ensure that BVMs with non-beverage merchandising shelves are tested consistently and in a representative manner while limiting test burden, DOE is proposing to specify in a new section 2.2.1.1 of appendix B that shelves within the refrigerated compartment that are only for non-beverage merchandise must not be loaded for testing. DOE expects that manufacturers may already use this approach for testing shelves that cannot accommodate any beverage containers (*i.e.,* it is unclear how manufacturers currently test such BVMs, and DOE has

not received petitions for waiver regarding this issue). DOE similarly does not expect that this proposal would result in any cost impacts for BVM manufacturers.

DOE requests comment on the proposal to specify that non-beverage merchandise shelves not be loaded for testing BVMs. DOE seeks information on how such models are currently tested and on whether this proposal would impact current BVM ratings or test burden.

As discussed in section III.B, section 2.2.1.4 of appendix B requires that the standard product 12-ounce cans or 20-ounce bottles be filled with liquid with a density of 1.0 grams per milliliter (''g/mL'') ± 0.1 g/mL at 36 °F. Whereas, ANSI/ASHRAE Standard 32.1–2017 requires the beverage temperature test packages to be filled with a 33 percent propylene glycol and 67 percent water solution. ANSI/ASHRAE Standard 32.1–2017 does not specify whether these glycol and water percentages are based on weight or volume. In the May 2021 RFI, DOE requested comment on whether the standard products defined in appendix B require any further specifications. 86 FR 27054, 27059. DOE requested feedback on whether it should specify the contents of the test containers (*e.g.,* the 33 percent propylene glycol and 67 percent water solution, and whether these percentages are based on weight or volume) as specified in ANSI/ASHRAE Standard 32.1–2017. *Id.*

The CA IOUs commented that they believe the ANSI/ASHRAE Standard 32.1–2017 specifications for test container contents would result in higher reproducibility and should be adopted for the DOE test procedure. (CA IOUs, No. 6, p. 2)

DOE specifies the use of a propylene glycol solution in other test procedures, such as for testing commercial refrigeration equipment.[10] Commercial freezers are by definition capable of operating below 32 °F (*see* 10 CFR 431.62) and are tested at a 0 °F integrated average temperature. *See* section 2.1 of 10 CFR part 431, subpart C, appendix B. While water would freeze at operating temperatures below 32 °F, the propylene glycol solution has a reduced freezing point and remains a liquid at the test temperatures. The potential for a phase change in the test solution introduces test variability as solid and liquid water have different heat transfer properties, and if the phase change occurs during a test, the measured temperature during the phase change may not represent actual storage temperatures.

For BVMs, the target test condition of 36 °F is above the freezing point of water and other liquids likely to be used for testing BVMs. As a result, DOE has tentatively determined that specifying an alternative propylene glycol solution for testing BVMs is not likely to reduce test variability as is the case when testing other types of equipment at temperatures below the freezing point of water. Additionally, requiring the use of a propylene glycol solution would increase test burden compared to the existing test approach, which allows more flexibility and does not require the preparation of a test solution. For these reasons, DOE is not proposing to amend the existing test procedure provisions regarding the specifications of the standard product.

4. Lowest Application Product Temperature

Section 2.1.1 of appendix B requires that the integrated average temperature (''IAT'') of the BVM be 36 °F ± 1 °F over the test period. *See* table B.1 of appendix B. For BVMs only capable of operating at temperatures higher than the specified IAT of 36 °F ± 1 °F, section 2.1.3 of appendix B requires testing at the BVM's lowest application product temperature (''LAPT'').

DOE's compliance certification database[11] lists all BVM models certified to DOE, including the LAPT used for rating each model, if applicable. Of the 153 individual models included in the compliance certification database at the time of this analysis, 9 individual models (representing 3 basic models) from one manufacturer are rated at LAPTs ranging from 37.9 °F to 41.3 °F. Additional models had previously been certified to DOE (but are not included in the current DOE compliance certification database) as being rated at a LAPT below the 36 °F ± 1 °F IAT range required in the DOE test procedure. For example, models from one manufacturer were previously rated at an IAT of 32 °F, indicating that those BVMs could not operate at 36 °F ± 1 °F.

In the May 2021 RFI, DOE requested comment on whether the LAPT provisions are appropriate for testing BVMs not capable of maintaining an IAT of 36 °F ± 1 °F. 86 FR 27054, 27059. DOE further requested comment on whether appendix B should include additional instructions for testing BVMs only capable of maintaining temperatures below the specified 36 °F ± 1 °F. *Id.*

In response to the May 2021 RFI, the CA IOUs recommended that DOE require BVMs to operate during testing at or below the standard temperature in ANSI/ASHRAE Standard 32.1–2017 to ensure that all BVMs are tested consistently, instead of the current test procedure, which allows for testing at the lowest application product temperature. (CA IOUs, No. 6, p. 2)

DOE acknowledges that the LAPT provisions result in some BVMs being tested at a higher temperature than those capable of maintaining the required test IAT. However, for BVMs not capable of operating with temperatures of 36 °F ± 1 °F, the LAPT test provisions are representative of the actual operation of those models. Accordingly, the LAPT test provisions measure the energy use of those BVMs during a representative average use cycle or period of use as required by EPCA. (42 U.S.C. 6293(b)(3)) Additionally, any models tested and rated under the LAPT provisions are identified in DOE's compliance certification database, along with the actual IAT maintained during testing for those models, so that such information is available to customers making purchasing decisions.

DOE is proposing to maintain the current LAPT provisions and add an additional provision for testing BVMs that are only capable of maintaining temperatures below the 36 °F ± 1 °F range. For these units, DOE proposes to test at the highest thermostat setting. This would allow for testing the BVM under the setting closest to the required IAT. DOE proposes to amend the definition of LAPT in section 1.2 of appendix B to the following:

''Lowest application product temperature'' means the following:

(a) For units that operate only at temperatures above the integrated average temperature specified in Table 1 of ANSI/ASHRAE Standard 32.1–2017: The lowest integrated average temperature a given basic model is capable of maintaining so as to comply with the temperature stabilization requirements specified in Section 7.2.2.2 of ANSI/ASHRAE Standard 32.1–2017.

(b) For units that operate only at temperatures below the integrated average temperature specified in Table 1 of ANSI/ASHRAE Standard 32.1–2017: The highest integrated average temperature a given basic model is capable of maintaining so as to comply with the temperature stabilization requirements specified in Section 7.2.2.2 of ANSI/ASHRAE Standard 32.1–2017.

[10] *See* 10 CFR part 431, subpart C, appendix B, which incorporates by reference ANSI/ASHRAE Standard 72–2005, (''ANSI/ASHRAE 72–2005''), ''Method of Testing Commercial Refrigerators and Freezers.'' Section 6.2.1 of ANSI/ASHRAE 72–2005 specifies the use of propylene glycol solution in test simulators.

[11] Available at *www.regulations.doe.gov/certification-data.*

DOE has tentatively determined that this proposal would not affect current BVM ratings or testing costs because DOE has not identified any BVMs currently available on the market that would be tested under the newly proposed provision addressing units that operate only at temperatures below the IAT of 36 °F ± 1 °F.

DOE requests comment on its initial determination to maintain the existing LAPT approach for units that operate only at temperatures above the IAT of 36 °F ± 1 °F. DOE requests comment on its proposal to require testing at the highest integrated average temperature a given basic model is capable of maintaining for units that are only capable of operating at temperatures below the specified IAT of 36 °F ± 1 °F.

5. Payment Mechanisms

Section 2.2.5.1 of appendix B requires testing BVMs with no payment mechanism in place, the payment mechanism in-place but de-energized, or the payment mechanism in place but set to the lowest energy consuming state, if it cannot be de-energized. A default payment mechanism energy consumption value of 0.20 kilowatt-hours per day (''kWh/day'') is added to the measured energy consumption, according to section 2.3 of appendix B. In Section 7.1.2.2. of ANSI/ASHRAE Standard 32.1–2017, payment mechanisms are required to be disconnected during testing.

In the July 2015 Final Rule, DOE determined that because payment mechanisms are variable and are not always included in the machine at the time of sale, it is difficult to unambiguously specify a ''representative'' payment mechanism or device combination. 80 FR 45758, 45776. DOE concluded that conducting physical testing of BVMs with no payment mechanisms installed, as opposed to testing with the payment mechanisms in place, is the most straightforward, repeatable, and unambiguous approach. *Id.* Because payment mechanisms are integral to the vending function of BVMs, DOE established the 0.20 kWh/day value based on a weighted average energy consumption of 25 different payment mechanisms available at the time of the July 2015 Final Rule, which included 11 coin mechanisms, 11 bill validators, and 3 credit card readers. 80 FR 45758, 45777.

Since the publication of the July 2015 Final Rule, the prevalence of different payment mechanisms for BVMs may have shifted. For example, credit card readers may be more common in the field compared to coin mechanisms or bill validators, or BVMs may incorporate multiple types of payment mechanisms. Based on the July 2015 Final Rule data, credit card readers had the highest idle mode power consumption. 80 FR 45758, 45777. If such a shift has occurred in the market, an amended payment mechanism energy adder may provide results that are more representative of average energy use. Alternatively, a direct test of energy consumption rather than a fixed energy use adder may be more representative of average energy use.

In the May 2021 RFI, DOE requested comment on whether BVMs are typically sold with payment mechanisms in place. 86 FR 27054, 27059. If not, DOE requested information on the types of payment mechanisms typically installed on BVMs and their associated energy use. *Id.*

DOE did not receive any feedback on whether BVMs are typically sold with payment mechanisms.

Based on a survey of units currently available on the market, DOE has observed that coin and bill payment mechanisms are typically included with BVMs as sold or shipped, but that credit card readers are typically sold as an optional feature and are sold separately from the BVM. DOE does not have data regarding the relative use of credit card readers as compared to coin and bill payment mechanisms.

In the May 2021 RFI, DOE additionally requested feedback on whether the current 0.20 kWh/day energy use assigned to payment mechanisms is representative of the current BVM market. 86 FR 27054, 27059.

ASAP and NRDC commented that 0.2 kWh/day may not be representative of the current market and that in the case of a BVM shipped without a payment mechanism, it would make sense to specify a default value that represents the most energy-consuming payment mechanism. (ASAP and NRDC, No. 4, p. 2) ASAP and NRDC, as well as the CA IOUs, commented that DOE should include a direct test of the energy use of payment mechanisms in the test procedure, stating that individual payment mechanism energy use can vary significantly and may depend on integrated ''smart functionality.'' (ASAP and NRDC, No. 4, p. 2; CA IOUs No. 6, p.3)

DOE conducted a review of currently available payment mechanisms to determine whether the previously derived 0.20 kWh/day default payment mechanism energy consumption is appropriate. DOE reviewed manufacturer specifications for 3 coin changers, more than 30 bill validators, and 2 credit card readers. A summary of the calculated daily energy consumptions for each payment mechanism type based on the manufacturer specifications is presented in Table III.1.

TABLE III.1—PAYMENT MECHANISM ENERGY CONSUMPTION SUMMARY

Payment mechanism type	Average calculated daily energy consumption (kWh/day)	Range of calculated daily energy consumption (kWh/day)
Coin Changer	0.07	0.01 to 0.12
Bill Validator	0.11	0.04 to 0.17
Credit Card Reader	0.10	0.07 to 0.12

As stated, DOE has observed that coin and bill payment mechanisms are typically included with BVMs as shipped, and that credit card readers are an additional accessory provided by the manufacturer as an option or sold separately. DOE has tentatively determined that requiring a payment mechanism that is included with a BVM as shipped (*i.e.,* the coin and bill payment mechanism) to be energized during testing would provide a more representative measure of energy use compared to the current default value specified in the test procedure. DOE is proposing to amend the test procedure to require that if a BVM is shipped with coin and/or bill payment mechanisms in place, the payment mechanisms shall be energized during testing. Because credit card readers are more likely to be

optional features or sold separately, DOE is proposing to maintain the existing approach in which credit card payment mechanisms would be disconnected or de-energized, if possible, or in place but set to the lowest energy consuming state, if it cannot be de-energized, for testing.

To account for the possibility that a BVM may be shipped with no payment mechanism in place, DOE is proposing to maintain the 0.20 kWh/day energy use adder to represent the energy consumption of a payment mechanism during representative use. Based on the identified payment mechanism energy use data, 0.20 kWh/day is near the average energy use of a coin changer plus a bill validator, which DOE observed is the typical default payment mechanism setup. DOE is not proposing an energy use adder based on the most energy-consuming payment mechanisms, as recommended by ASAP and NRDC, to ensure that the energy consumption as measured from testing reflects operation during a representative average use cycle or period of use.

Because the proposal to test BVMs with energized coin and bill payment mechanisms, when included with a BVM as shipped, would likely affect existing BVM energy use ratings, DOE is proposing that these particular amendments would not be required for use until the compliance date of any future amended energy conservation standards for BVMs, should such standards be adopted. As such, DOE has tentatively determined that manufacturers would not be required to re-test or re-certify BVMs as a result of the proposed payment mechanism approach. DOE has also tentatively determined that manufacturers would incur no additional costs related to this proposal. On the compliance date of any amended energy conservation standards for BVMs, should such standards be adopted, this proposal would only require re-testing for any BVMs shipped with coin or bill payment mechanisms in place. For all other BVMs, the existing test procedure approach would remain unchanged.

DOE requests comment on its proposal to require testing with coin and bill payment mechanisms energized, if they are included in the BVM as shipped. DOE requests comment on whether this approach would result in any additional test burden. DOE additionally requests comment on its proposal to require that any credit card payment mechanisms be disconnected or de-energized, if possible, or in place but set to the lowest energy consuming state, if they cannot be de-energized, for testing. DOE further requests information on the continued use of the 0.20 kWh/day energy use adder for BVMs shipped with no coin or bill payment mechanisms in place. DOE also requests comment on the proposal to not require the use of these amendments until the compliance date of any future amended energy conservation standards for BVMs.

6. Low Power Modes

Appendix B incorporates definitions and test requirements for two types of low power modes [12] (*i.e.,* accessory low power mode and refrigeration low power mode). Section 7.2.2.6.2 of ANSI/ASHRAE Standard 32.1–2017 requires that low power modes not be allowed to operate during testing.

In the July 2015 Final Rule, DOE acknowledged that the two types of low power modes incorporated into the test procedure may not address all forms of low power modes available in the BVM market. 80 FR 45758, 45786. DOE identified ''learning-based'' energy management controls that use historic sales and traffic data to predict times of high and low traffic; however, DOE did not propose a test procedure for such controls, determining that it would be difficult to develop a repeatable test procedure to evaluate the energy savings of such controls during a 24-hour test in a laboratory. *Id.*

In the May 2021 RFI, DOE requested comment on the availability of additional low power modes, including any ''learning-based'' energy management controls, and on whether such modes should be included in the test procedure. 86 FR 27054, 27060.

NEEA and NPCC recommended that DOE consider the energy benefits of ''learning-based'' energy management controls and include them in the test procedure. NEEA and NPCC noted that while energy savings from these technologies is still unknown, their research shows a trend in this technology being implemented into BVMs. NEEA and NPCC cited claims that ''smart'' features can provide up to 1,600 kWh in energy savings per year. (NEEA and NPCC, No. 7, p. 2)

DOE expects that the impacts of any learning-based controls would vary based on specific field installation and usage scenarios. DOE is not aware of, and interested parties have not provided, any data that could be used to determine the impacts of learning-based controls on energy use (for example, by increasing the amount of time spent in either accessory low power mode or refrigeration low power mode, rather than vending mode). DOE also tentatively maintains its prior determination that it would be difficult to develop a repeatable and reproducible test procedure to evaluate the energy savings of such controls during a 24-hour test in a laboratory. For these reasons, DOE is not proposing to account for ''learning-based'' controls in the test procedure at this time. DOE has tentatively determined to continue accounting for operation in accessory low power mode and refrigeration low power mode, as described in the following sections.

DOE requests comment on its tentative determination to not account for learning-based controls. DOE continues to seek data and information on the implementation and operation of such controls for BVMs.

a. Accessory Low Power Mode

Section 1.2 of appendix B defines accessory low power mode as a state in which a BVM's lighting and/or other energy-using systems are in low power mode, but that is not a refrigeration low power mode. Functions that may constitute an accessory low power mode may include, for example, dimming or turning off lights, but does not include adjustment of the refrigeration system to elevate the temperature of the refrigerated compartment(s). Section 2.2.4 of appendix B states that accessory low power mode may be engaged for the final 6 hours of the 24-hour test period and requires that the BVM be operated in the lowest energy-consuming lighting and control settings for testing this mode. Section 2.2.4 also requires that any automatic activation of refrigeration low power modes be prevented during the accessory low power mode test period.

The 24-hour test procedure starts after a BVM achieves stabilization as determined in vending mode. See section 2.1.1.1 of appendix B. Because the test period ends with 6 hours of operation in accessory low power mode, when the mode is engaged for testing, the BVM would end the test in a different operating state than at the start of the test. Although the refrigeration system and cabinet temperatures would likely not change with operation in an accessory low power mode (because accessory low power mode does not include adjustment of the refrigeration system to elevate the temperature of the refrigerated compartment), some

[12] ''Low power mode'' means a state in which a beverage vending machine's lighting, refrigeration, and/or other energy-using systems are automatically adjusted (without user intervention) such that they consume less energy than they consume in an active vending environment. Section 1.2, appendix B.

transient recovery period may be required for a BVM to return to stable operation in vending mode after operating in accessory low power mode for 6 hours. If such a recovery period exists, testing the accessory low power mode during the middle of the 24-hour test period may be more representative by capturing any transition periods between operating modes.

In the May 2021 RFI, DOE requested comment on whether BVMs require any recovery period following operation in accessory low power mode to return to stable operation in vending mode. 86 FR 27054, 27060. Additionally, DOE requested information on any drawbacks or potential test burdens that would result from testing the accessory low power mode during a period other than at the end of the 24-hour test period. *Id.*

DOE did not receive comments on this topic. Through testing, DOE has observed that measured temperatures remain unchanged during operation in vending mode and accessory low power mode. The existing test approach also limits test burden by requiring only one operating mode transition during the 24-hour test period. Moving the accessory low power mode operating period to a period other than at the end of the 24-hour test period may require technicians to provide additional input to the unit during the test (*i.e.,* once to enter accessory low power mode and again to re-enter vending mode), depending on the BVM's controls. For these reasons, DOE is not proposing any changes to the current test procedure approach of requiring accessory low power mode to be tested at the end of the 24-hour test period.

In the July 2015 Final Rule, DOE stated that BVMs may employ a variety of control strategies and control a variety of different components in accessory low power mode. 80 FR 45758, 45785. DOE established testing under the settings representing the maximum energy savings to avoid potential repeatability issues associated with identifying test control settings for BVMs with various types of accessory low power modes. *Id.*

In the May 2021 RFI, DOE also requested comment on the typical average duration a BVM operates in accessory low power mode per day, what control settings users apply for accessory low power mode in the field, and whether multiple accessory low power mode test settings may be appropriate for BVMs with various control settings. 86 FR 27054, 27060.

The CA IOUs commented that the current DOE test method (18 hours of normal operation and 6 hours of accessory low power mode) may not be fully representative of the most common locations and that DOE should conduct further research to verify this schedule. (CA IOUs, No. 6, p. 3)

DOE acknowledges that BVMs may be used in a variety of locations and that the actual duration of accessory low power mode use will vary based on installation location. In the NOPR preceding the July 2015 Final Rule, DOE stated that the 6-hour duration was selected as a representative length of time for the low power mode test period based on the fact that it is intended to represent off hours between periods of vending when the facility may be closed or have low occupancy. 79 FR 46908, 46926. While DOE recognized that there are a range of types of low power mode controls and time periods for which these controls are enabled, DOE determined that a timeframe of 6 hours was a reasonable representation of average field use. *Id.*

DOE is not aware of data indicating that durations other than the currently defined 6 hours would be more representative of typical BVM operation in accessory low power mode. The intent of the accessory low power mode test period remains unchanged from the July 2015 Final Rule approach (*i.e.,* representing off hours between periods of vending when the facility may be closed or have low occupancy). Given the lack of any data supporting a change to this approach, DOE is not proposing any changes to the 6-hour duration for accessory low power mode testing.

b. Refrigeration Low Power Mode

Section 1.2 of appendix B defines refrigeration low power mode as a state in which a BVM's refrigeration system is in low power mode because of elevation of the temperature of the refrigerated compartment(s). Section 2.3.2.1 of appendix B includes provisions for confirming the presence of a refrigeration low power mode, either through an increase in average next-to-vend beverage temperature or lack of compressor operation. Unlike accessory low power mode, appendix B does not include a direct test of refrigeration low power mode. Instead, BVMs with refrigeration low power mode receive a 3-percent reduction in DEC as measured. Section 2.3.2 of appendix B.

In the July 2015 Final Rule, DOE determined that a 3-percent energy reduction was more appropriate than a physical test of refrigeration low power mode because refrigeration low power modes are extremely variable in their control strategies and operation and may require instructions from the manufacturer to accommodate specific provisions of a physical test. 80 FR 45758, 45785. DOE stated that a physical test would reduce consistency and repeatability and would make the method impractical to implement. *Id.*

DOE established the 3-percent credit for refrigeration low power mode by testing several BVMs with this mode. DOE noted in the July 2015 Final Rule that this value is an average that is representative of the common types of refrigeration low power modes available in the marketplace. 80 FR 45758, 45786.

In the May 2021 RFI, DOE requested comment on whether any amendments are needed to the definition of refrigeration low power mode or the corresponding refrigeration low power mode validation test method. 86 FR 27054, 27060. Additionally, DOE requested comment on whether any other BVM operating modes should be considered a refrigeration low power mode but cannot meet the current definition or validation test method (*e.g.,* operating modes with little or no increase in refrigerated compartment temperature with some amount of compressor operation). *Id.*

DOE did not receive any comment on these topics and is not proposing any changes to the current refrigeration low power mode and validation test method.

In the May 2021 RFI, DOE also requested comment on the current approach of applying a 3-percent energy reduction for any BVMs with a refrigeration low power mode. 86 FR 27054, 27060. Specifically, DOE asked for comment regarding whether a physical test to account for energy reduction associated with the low power mode is feasible, whether any test method currently exists, and the burden associated with running such a test. *Id.*

ASAP and NRDC, and the CA IOUs encouraged DOE to include a direct physical test instead of a fixed credit for refrigeration low power mode testing and to incorporate the resulting energy consumption into the daily energy consumption calculation. (ASAP and NRDC, No. 4, p. 1; CA IOUs, No. 6, p. 2) ASAP and NRDC also stated that the 3-percent credit may be inhibiting further improvements by failing to differentiate between refrigeration low power mode control strategies. (ASAP and NRDC, No. 4, p. 1) ASAP and NRDC stated that the accessory low power mode test could potentially be expanded to capture refrigeration low power modes, including a recovery period. (*Id.*) The CA IOUs suggested that the refrigeration low power mode test procedure should include an evaluation of the time and energy to return the

standard product to an IAT of 36 °F ± 1 °F, since the test may cause temperatures to drift. The CA IOUs estimated that this would be a primarily passive test and would likely only add 30 minutes of active work to the test method. (CA IOUs, No. 6, p. 2)

Based on a review of operating instructions for BVMs currently available with refrigeration low power mode, DOE has tentatively determined that the challenges of implementing a refrigeration low power mode test would remain the same as those considered in the July 2015 Final Rule. Specifically, DOE observed that the implementation of refrigeration low power mode would depend on the specific control parameters entered by the user or installer regarding duration, operating temperatures, and operation of the refrigeration system. Additionally, establishing a consistent, repeatable test (*i.e.,* measuring refrigeration low power mode operation over a defined duration from initiation of the low power mode until temperature recovery to the specified test temperature) may require specific instructions from the manufacturer to modify the controls in such a way to accommodate the specific requirements of a physical test. Testing on a consistent basis would also likely require an iterative process to identify the appropriate test settings. Due to the difficulty of accounting for the wide variety of refrigeration low power modes in a consistent, fair, and reasonable manner, as well as the potential burden of any such test approach, DOE is not proposing any changes to the current calculation approach to account for operation in refrigeration low power mode.

DOE is also not proposing any changes to the 3-percent credit as the energy reduction associated with refrigeration low power mode. DOE acknowledges that the actual energy impact of refrigeration low power mode would vary depending on the user-specified control parameters for that mode, including duration and temperature settings or refrigeration system control. The investigative testing used to determine the 3-percent credit assumed 6 hours of operation in refrigeration low power mode, including the time needed for temperature recovery. 79 FR 46908, 46925–46926. DOE is not proposing any changes to the 6-hour test period for accessory low power mode, and therefore is maintaining the estimate of refrigeration low power mode impact based on that same duration.

DOE requests comment on its initial determination to maintain the existing calculation approach to account for operation in refrigeration low power mode. DOE continues to seek information and data on whether the assumed operating period (6 hours) and corresponding energy consumption impact (3 percent) are appropriate for BVMs operating in refrigeration low power mode.

7. Reloading and Recovery Period

The existing DOE test procedure considers BVM performance only during stable operation (including any operation in accessory low power mode). During typical use, BVMs are regularly opened and restocked with warmer beverages. Accounting for BVM energy use during restocking periods and the subsequent product temperature recovery periods may better represent the actual energy use of BVMs during normal operation.

As stated in section III.B, ANSI/ASHRAE Standard 32.1–2017 provides an additional recovery test to determine the temperature recovery time of the BVM when loaded with product at a certain temperature, whereas appendix B contains no such test. This recovery test does not include a measurement of the corresponding energy consumption. Table 2 in ANSI/ASHRAE Standard 32.1–2017 specifies the reloaded sealed-beverage temperature, 90 °F, and the final instantaneous average next-to-vend beverage temperature, 40 °F, for the recovery test. Additionally, Table 4 in ANSI/ASHRAE Standard 32.1–2017 lists the door open durations, between 10 and 20 minutes, required during the recovery test while reloading the BVM.

In the May 2021 RFI, DOE requested comment and supporting data on whether BVM restocking represents a significant energy consumption for BVMs. 86 FR 27054, 27061. DOE also requested comment and supporting data regarding the applicability of the recovery test described in ANSI/ASHRAE Standard 32.1–2017. *Id.* DOE additionally requested comments and supporting data on the frequency and duration of door openings for reloading BVMs. *Id.*

DOE did not receive any comments on these topics in response to the May 2021 RFI. Based on typical operating descriptions provided in vending industry websites,[13] DOE expects that BVM restocking events are relatively infrequent, on the order of once per week, while the remainder of BVM operating time is spent in stable operation. DOE has tentatively determined that the current test procedure based on stable operation measures energy consumption during a representative average use cycle or period of use and is therefore not proposing any additional testing to account for reloading events.

8. Alternate Refrigerants

In an April 10, 2015 final rule, the Environmental Protection Agency listed propane (R–290), isobutane (R–600a), and the hydrocarbon blend R–441A as acceptable refrigerants for use in BVMs, subject to a 150-gram charge limit per refrigeration circuit and other safety measures to address flammability. 80 FR 19454, 19491. Due to the flammability of these refrigerants, BVMs using hydrocarbon refrigerants may need to implement additional controls and components to mitigate the risk of ignition from any potential refrigerant leaks. The need for such controls also may vary depending on the intended installation location for BVMs.

In the May 2021 RFI, DOE requested comment on what additional components and controls manufacturers may need to add to their equipment when designing BVMs with alternative refrigerants. 86 FR 27054, 27061. DOE also requested comment on the typical settings used for such components and controls, if multiple settings are available. *Id.* DOE additionally requested comment on whether any test procedure modifications are necessary to account for the energy consumption associated with these components and controls and any corresponding impact on testing burden. *Id.*

NAMA commented that the industry is currently partnered with Oak Ridge National Laboratory (''ORNL'') under a cooperative research and development agreement (''CRADA'') to collect information to inform how low global warming potential (''low-GWP'') refrigerants can be used to increase energy efficiency and comply with safety standards. NAMA stated that manufacturers and engineers at ORNL are currently focused on designing to protect against inadvertent leaks of flammable refrigerants and this technology may use a small amount of energy. Because of this, NAMA commented that any test procedure should not include the energy use of such safety measures. NAMA urged DOE to postpone amendments to test procedures until this research is concluded. (NAMA, No. 5, p. 2)

The current BVM test procedure requires that, unless specified otherwise, all standard components that would be used during normal operation

[13] See *blog.vendnetusa.com/how-often-should-you-restock-your-vending-machines/* and *www.vendnm.com/often-restock-inspect-vending-machine/,* which both refer to restocking once per week.

of the basic model in the field and are necessary to provide sufficient functionality for cooling and vending products in field installations (*i.e.,* product inventory, temperature management, product merchandising (including, *e.g.,* lighting or signage), product selection, and product transport and delivery) shall be in place during testing and shall be set to the maximum energy-consuming setting if manually adjustable. Section 2.2.5 of appendix B. Appendix B further requires that components not necessary for the inventory, temperature management, product merchandising (*e.g.,* lighting or signage), product selection, or product transport and delivery shall be de-energized, or if they cannot be de-energized without preventing the operation of the machine, then they shall be placed in the lowest energy consuming state. *Id.* Any components with controls that are permanently operational and cannot be adjusted by the machine operator shall be operated in their normal setting. *Id.*

Leak mitigation controls are a component that may be offered on BVMs. To the extent that leak mitigation controls are a user controllable accessory (*i.e.,* if they can be turned off), BVMs are able to provide product inventory, temperature management, product merchandising, product selection, and product transport and delivery without the leak mitigation controls functioning. If the leak mitigation controls are permanently operational and cannot be adjusted by the user, the controls would always be operating in their normal setting. Section 2.2.5 of appendix B specifies test settings for accessories, including those not required for normal BVM operation and those with permanently operational controls. Because section 2.2.5 of appendix B already provides accessory test instructions, DOE has tentatively determined that this section currently addresses the use of leak mitigation controls during testing, but recognizes that further specification may help ensure reproducible testing. DOE is therefore proposing to amend the test procedure to provide specific instructions regarding the use of leak mitigation controls consistent with the existing requirements in appendix B. Specifically, DOE is proposing to specify in newly added section 2.2.5.11 of appendix B that if the use of leak mitigation controls is a user-controlled function (*e.g.,* if the use of the controls is optional and intended only for specific installations), the controls would be de-energized or in their lowest energy consuming state during testing. If leak mitigation controls are not user-controlled and are always operational, DOE is proposing that the controls would be operational for testing.

DOE acknowledges that the investigative work regarding leak mitigation is ongoing. However, if leak mitigation controls always operate and cannot be de-energized by the user, accounting for the energy use of such controls would ensure that the DOE test procedure measures energy consumption during a representative average use cycle or period of use as required by EPCA. (42 U.S.C. 6293(b)(3))

As discussed, the proposed instructions regarding leak mitigation controls are consistent with the existing requirements in section 2.2.5 of appendix B. Therefore, DOE does not expect the proposed amendments to affect current BVM ratings or result in any additional testing costs.

DOE requests comment on the proposed instructions regarding leak mitigation control settings for BVM testing. Specifically, DOE requests information regarding how such controls are currently or expected to be implemented in BVMs, including whether the controls can be controlled by the user.

The CA IOUs commented to encourage the adoption of low-GWP alternative refrigerants in this and other relevant rulemakings, noting that the use of R–134a in new vending machines has been banned in California since January 1, 2019. The CA IOUs stated that as of June 10, 2021, several BVM manufacturers continue to provide R–134a systems, but that alternate refrigeration-based BVMs are growing in market share. The CA IOUs urged DOE to consider refrigerant choice as an efficiency design option for this rulemaking. The CA IOUs also recommended that DOE monitor ANSI/ASHRAE Standard 15–2019 ''Safety Standard for Refrigeration Systems'' (''ANSI/ASHRAE 15–2019'') and UL Standard 541 ''Refrigerated Vending Machines'' (''UL 541'') to ensure that that the new test procedure will reflect the dynamic regulatory market around refrigerants. (CA IOUs, No. 6, p. 3)

DOE has tentatively determined that the use of alternative refrigerants in BVMs does not require any specific amendments or instructions in the test procedure, except as noted with respect to leak mitigation controls. Additionally, the test procedure proposed in this NOPR, as well as the test procedure currently required for use, measures any energy efficiency benefits of alternative refrigerants. The use of alternative refrigerants to improve the efficiency of BVMs may be considered as a technology option in the analysis for any rulemaking to consider amended energy conservation standards for BVMs. DOE is monitoring ANSI/ASHRAE 15–2019 and UL 541 to determine the applicability of alternative refrigerants to the BVM market.

9. Connected Functions

The current DOE test procedure for BVMs does not include specific test requirements regarding connected or smart features, but section 2.2.5 of appendix B provides instructions regarding accessories. Section 2.2.5 of appendix B generally requires all components necessary to provide sufficient functionality for cooling and vending products in field installations (*i.e.,* product inventory, temperature management, product merchandising (including, *e.g.,* lighting or signage), product selection, and product transport and delivery) to be in place during testing and set to the maximum energy-consuming setting if manually adjustable. Other components not necessary for such functionality are de-energized or set to their lowest energy consuming state.

In the May 2021 RFI, DOE requested comment on the prevalence of connected functions, the BVM functions associated with them, how often they are used, and their corresponding energy use impacts. 86 FR 27054, 27061. DOE also requested comment on whether the existing DOE test procedure instructions for accessories in section 2.2.5 of appendix B adequately address test settings for connected functions. *Id.*

NEEA and NPCC recommended that DOE include all energy consuming accessories or features in the BVM test procedure because their research indicates a trend in ''intelligent'' vending machines. NEEA and NPCC noted that these vending machines offer several additional features including the following: Machine/inventory management, flexible payment options, remote communication, Wi-Fi, phone charging, printing, and UV light sanitation. (NEEA and NPCC, No. 7, p. 2,3)

ASAP and NRDC commented that the existing DOE test provisions regarding de-energizing non-essential accessories may affect connected functions that impact the overall energy use of a BVM, and encouraged DOE to investigate and capture the energy consumption associated with the connected functions that would normally be de-energized during testing. (ASAP and NRDC, No. 4, p. 3)

Based on a review of BVMs available on the market, the types of connected

functions identified in the NEEA and NPCC comment do not appear to be common. Additionally, DOE lacks information on how frequently such functions would be used on BVMs with such functions. Without this data, DOE has no information to suggest that the current testing approach would produce results that are unrepresentative of an average use cycle or period of use. DOE therefore is not proposing any changes to the current test procedure approach in section 2.2.5 of appendix B as applicable to connected functions. As described, this approach requires testing with connected functions energized if they are necessary to provide sufficient functionality for cooling and vending products in field installations. Connected functions that are not necessary to provide sufficient functionality for cooling and vending products in field installations are de-energized or placed in the lowest energy consuming state.

DOE requests comment on its tentative determination to maintain the existing test procedure approach in section 2.2.5 of appendix B as applicable to connected functions. DOE continues to request information and data on the prevalence of connected functions, the BVM functions associated with them, how often they are used, and their corresponding energy use impacts.

10. Condenser Conditions

In response to the May 2021 RFI, CoilPod commented that condenser coils become clogged in service, significantly impacting energy efficiency, and that the test procedure does not account for such coil fouling. CoilPod questioned whether it would be possible for the test procedure to account for the lack of coil cleanings by BVM owners. CoilPod stated that energy savings of approximately 20 percent could result from coil cleaning units. (CoilPod, No. 3, p. 1)

DOE acknowledges that the energy consumption of BVMs can change over the lifetime of the equipment due to lack of maintenance or other factors. However, the DOE test procedure considers the performance of new BVMs without considering any potential long-term performance of the unit. Regarding the specific topic of condenser coil fouling, the end user is responsible for properly maintaining the BVM, including any condenser cleaning. Accordingly, DOE is not proposing to amend its test procedure to account for operation with clogged condensers.

While DOE does not account for lifetime energy consumption in its test procedures, it does consider energy consumption over the lifetime of the equipment in the analysis conducted in support of developing potential amended energy conservation standards. In such an analysis, DOE may apply adjustment factors to consider performance degradation over time.

DOE requests any additional information and data on how BVM energy consumption may change over the lifetime of the equipment. DOE also requests comment on whether any performance degradation occurs consistently for all BVMs, or whether the impacts vary depending on equipment type or specific equipment designs.

11. Removal of Obsolete Provisions

As discussed in section I.B, appendix B is required for testing BVMs manufactured on or after January 8, 2019. As such, appendix A is now obsolete for new units being manufactured. Therefore, DOE is proposing to remove appendix A. DOE is not proposing to redesignate appendix B as appendix A in order to avoid confusion regarding the appropriate version of the test procedure required for use.

Additionally, the introductory note to appendix B currently explains when manufacturers are required to use either appendix A or appendix B for compliance with energy conservation standards and representations of energy use. DOE is proposing to amend the introductory note to remove the obsolete instructions and to instead provide clarifying language regarding application of the payment mechanism provisions, as discussed in section III.C.5 of this document.

D. Test Procedure Costs and Harmonization

1. Test Procedure Costs and Impact

In this NOPR, DOE proposes to amend the existing test procedure for BVMs by referencing the most recent industry test standard, providing setup instructions for non-beverage shelves, updating the LAPT definition and instructions, requiring testing of coin and bill payment mechanisms if shipped with the BVM (but not until the compliance date of any amended energy conservation standards), specifying setup instructions for leak mitigation controls, and removing the obsolete appendix A. DOE has tentatively determined that these proposed amendments would not impact testing costs.

Other than the proposed amendment to measure coin and bill payment mechanisms, the proposals in this NOPR are generally consistent with the requirements under the existing DOE test procedure. The proposed amendments harmonize with the industry standard or provide additional test instructions, but do not substantively change testing as currently required in appendix B. Accordingly, DOE has tentatively determined that manufacturers would be able to rely on data generated under the current test procedure should any of these additional proposed amendments be finalized, and would not incur additional costs as a result of the amended test procedure.

Regarding the proposal to test with coin and bill payment mechanisms energized, DOE does not expect this proposal to impact testing costs until the compliance date of any amended energy conservation standards for BVMs, should such standards be adopted. At that time, the proposal would only require re-testing for any BVMs shipped with coin or bill payment mechanisms in place. For all other BVMs, the existing test procedure approach would remain unchanged. For any BVMs requiring re-testing upon the compliance date of any amended energy conservation standards for BVMs, DOE estimates re-testing costs of approximately $8,300 per basic model.[14]

DOE requests comment on the tentative determination that manufacturers would not incur any additional costs as a result of the proposed amended test procedure. DOE also requests comment on its estimate of per-test costs, should manufacturers re-test their BVM basic models to comply with any future amended BVM energy conservation standards.

In response to the May 2021 RFI, NAMA commented to express concern over ongoing business interruptions and economic hardships caused by the COVID–19 pandemic. NAMA stated that amending test procedures at this time would place an undue burden on the industry and urged DOE to postpone amending test procedures. (NAMA, No. 5, p. 1, 2)

As discussed, the proposed amendments would improve the clarity of the DOE test procedure while not substantively changing the existing test approach and the proposal to test with any coin and bill payment mechanisms energized would not be required for use

[14] DOE estimates that the BVM per-test cost is approximately $4,150, which includes the testing costs associated with running the low-power mode tests (*e.g.,* running the low power mode test with the optional refrigeration low power mode verification). For each certified basic model, DOE requires a sample size of two units ($4,150 × 2 = $8,300).

until the compliance date of any amended energy conservation standards for BVMs, should such standards be adopted. As a result, DOE has tentatively determined that the proposed amendments would not result in any additional costs for manufacturers and manufacturers would be able to rely on data generated under the current test procedure for BVMs already available on the market, until the compliance date of any amended energy conservation standards at which time any BVMs shipped with coin and bill payment mechanisms in place would be required to re-test.

2. Harmonization With Industry Standards

DOE's established practice is to adopt relevant industry standards as DOE test procedures unless such methodology would be unduly burdensome to conduct or would not produce test results that reflect the energy efficiency, energy use, water use (as specified in EPCA) or estimated operating costs of that product during a representative average use cycle or period of use. 10 CFR 431.4; Section 8(c) of appendix A of 10 CFR part 430 subpart C. In cases where the industry standard does not meet EPCA statutory criteria for test procedures DOE will make modifications through the rulemaking process to these standards as the DOE test procedure.

As discussed, the test procedure at appendix B incorporates by reference ANSI/ASHRAE Standard 32.1–2010. This standard provides definitions, test conditions, and test methods for measuring refrigerated volume and energy consumption of BVMs. The industry standards that DOE proposes to incorporate by reference via amendments described in this notice are discussed in further detail in section IV.M of this document. DOE requests comments on the benefits and burdens of the proposed updates and additions to industry standards referenced in the test procedure for BVMs.

DOE notes that the BVM test procedure at appendix B includes a number of deviations to ANSI/ASHRAE Standard 32.1–2010. Specifically, appendix B only refers to certain sections of ANSI/ASHRAE Standard 32.1–2010, includes additional definitions, provides detailed setup and settings instructions, accounts for operation in low power modes and payment mechanism energy consumption, and provides rounding instructions. These deviations were established to limit test burden (*i.e.,* by not requiring additional testing as specified in ANSI/ASHRAE Standard 32.1–2010), improve representativeness, and improve repeatability and reproducibility of the DOE test procedure as compared to the procedure in ANSI/ASHRAE Standard 32.1–2010. As discussed in sections III.B and III.C of this NOPR, DOE is proposing to incorporate by reference the most recent version of the industry standard, ANSI/ASHRAE Standard 32.1–2017. This version of the standard addresses certain deviations between appendix B and ANSI/ASHRAE Standard 32.1–2010. For other deviations not addressed in ANSI/ASHRAE Standard 32.1–2017, DOE has tentatively determined that the existing deviations in appendix B are necessary and appropriate.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866 and 13563

Executive Order (''E.O.'') 12866, ''Regulatory Planning and Review,'' as supplemented and reaffirmed by E.O. 13563, ''Improving Regulation and Regulatory Review, 76 FR 3821 (Jan. 21, 2011), requires agencies, to the extent permitted by law, to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, OIRA has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, this proposed regulatory action is consistent with these principles.

Section 6(a) of E.O. 12866 also requires agencies to submit ''significant regulatory actions'' to the Office of Information and Regulatory Affairs (''OIRA'') for review. OIRA has determined that this proposed regulatory action does not constitute a ''significant regulatory action'' under section 3(f) of E.O. 12866. Accordingly, this action was not submitted to OIRA for review under E.O. 12866.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis (''IRFA'') for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website: *energy.gov/gc/office-general-counsel.*

DOE reviewed this proposed rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE certifies that the proposed rule, if adopted, would not have significant economic impact on a substantial number of small entities. The factual basis of this certification is set forth in the following paragraphs.

Under 42 U.S.C. 6293, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered products. EPCA requires that any test procedures prescribed or amended under this section be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product during a representative average use cycle or period of use and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, EPCA requires that DOE amend its test procedures for all covered products to integrate measures of standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A))

Standby mode and off mode energy consumption must be incorporated into the overall energy efficiency, energy consumption, or other energy descriptor for each covered product unless the current test procedures already account for and incorporate standby and off mode energy consumption or such integration is technically infeasible. If an integrated test procedure is technically infeasible, DOE must prescribe a separate standby mode and off mode energy use test procedure for the covered product, if technically feasible. (42 U.S.C. 6295(gg)(2)(A)(ii)) Any such amendment must consider the most current versions of the International Electrotechnical Commission (''IEC'') Standard 62301 [15] and IEC Standard 62087 [16] as applicable. (42 U.S.C. 6295(gg)(2)(A))

With respect to Refrigerated Bottled or Canned Beverage Vending Machines (''BVMs''), EPCA requires the test procedure to be based on the 2004 version of ANSI/ASHRAE Standard 32.1, ''Methods of Testing for Rating Vending Machines for Bottled, Canned or Other Sealed Beverages.'' (42 U.S.C. 6293(b)(15))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including BVMs, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle. (42 U.S.C. 6293(b)(1)(A))

DOE is publishing this proposed rulemaking in satisfaction of the 7-year review requirement specified in EPCA. (42 U.S.C. 6293(b)(1)(A))

In this NOPR, DOE proposes to update 10 CFR 431.294, ''Uniform test method for the measurement of energy consumption of refrigerated bottled or canned beverage vending machines,'' as follows:

(1) Incorporate by reference the current industry standard ANSI/ASHRAE Standard 32.1–2017.

(2) Incorporate by reference the industry standard ANSI/AHAM HRF–1–2008 referenced in ANSI/ASHRAE Standard 32.1–2017.

(3) Maintain the existing DOE test procedure requirements that are not included in ANSI/ASHRAE Standard 32.1–2017.

(4) Provide setup instructions for non-beverage shelves in refrigerated compartments.

(5) Amend the definition of LAPT to allow for testing BVMs only capable of operating at temperatures below the specified test temperature.

(6) Require testing of coin and bill payment mechanisms if shipped with the BVM (but not until the compliance date of any amended energy conservation standards).

(7) Specify setup instructions for leak mitigation controls consistent with the existing test procedure instructions.

(8) Remove the obsolete test procedure in appendix A.

For manufacturers of BVMs, the Small Business Administration (''SBA'') has set a size threshold, which defines those entities classified as ''small businesses'' for the purposes of the statute. DOE used the SBA's small business size standards to determine whether any small entities would be subject to the requirements of the rule. *See* 13 CFR part 121. The equipment covered by this rule is classified under North American Industry Classification System (''NAICS'') code 333318,[17] ''Other Commercial and Service Industry Machinery Manufacturing.'' The SBA sets a threshold of 1,000 employees or less for an entity to be considered as a small business for this category.

DOE reviewed its Compliance Certification Database (''CCD'') [18] and California Energy Commission's Modernized Appliance Efficiency Database System (''MAEDbS'') [19] to create a list of companies that import, private label, produce or manufacture the products covered by this rulemaking. DOE relied on public data and subscription-based market research tools (*e.g.,* reports from Dun & Bradstreet [20]) to determine company location, headcount, and annual revenue. DOE screened out companies that do not offer BVMs covered by this proposed rulemaking, do not meet the SBA's definition of a ''small business,'' or are foreign-owned and operated.

DOE identified six original equipment manufacturers (''OEMs'') of BVMs sold in the United States. Of the six OEMs identified, three OEMs meet the SBA definition of a ''small business'' and are not foreign-owned or operated.

In this NOPR, DOE proposes to amend the existing test procedure for BVMs by referencing the most recent industry test standard, providing setup instructions for non-beverage shelves, updating the LAPT definition and instructions, requiring testing of coin and bill payment mechanisms if shipped with the BVM (but not until the compliance date of any amended energy conservation standards), specifying setup instructions for leak mitigation controls, and removing the obsolete appendix A. DOE has tentatively determined that these proposed amendments would not impact testing costs.

Other than the proposed amendment to measure coin and bill payment mechanisms, the proposals in this NOPR are generally consistent with the requirements under the existing DOE test procedure. The proposed amendments harmonize with the industry standard or provide additional test instructions, but do not substantively change testing as currently required in appendix B. Accordingly, DOE has tentatively determined that manufacturers would be able to rely on data generated under the current test procedure should any of these additional proposed amendments be finalized, and would not incur additional costs as a result of the amended test procedure.

Regarding the proposal to test with coin and bill payment mechanisms energized, DOE does not expect this proposal to impact testing costs until the compliance date of amended energy conservation standards for BVMs, should such standards be adopted. At that time, the proposal would require re-testing for BVMs shipped with coin or bill payment mechanisms in place. DOE estimates that the cost for third-party lab testing is approximately $8,300 per basic model. For all other BVMs, the existing test procedure approach would remain unchanged.

Although the re-testing of BVMs shipped with coin or bill payment mechanisms is not required at this time, DOE developed cost estimates for the three small BVM manufacturers,[21] should amended energy conservation standards be adopted in the future. For its analysis, DOE assumed that all the unique basic models identified in CCD and MAEDbS have coin or bill payment mechanisms and would need to be re-

[15] IEC 62301, *Household electrical appliances—Measurement of standby power* (Edition 2.0, 2011–01).

[16] IEC 62087, *Methods of measurement for the power consumption of audio, video, and related equipment* (Edition 3.0, 2011–04).

[17] The size standards are listed by NAICS code and industry description and are available at: *www.sba.gov/document/support--table-size-standards* (Last accessed on December 22, 2021).

[18] U.S. Department of Energy's Compliance Certification Database, available at: *www.regulations.doe.gov/certification-data* (last accessed December 16, 2021).

[19] California Energy Commission's Modernized Appliance Efficiency Database System, available at: *cacertappliances.energy.ca.gov/Pages/Search/AdvancedSearch.aspx* (last access December 16, 2021).

[20] The Dun & Bradstreet Hoovers subscription login is available online at *app.dnbhoovers.com/*

[21] ''Small BVM manufacturers'' refers to the ''small business'' OEMs identified as the small entities that would be subject to this proposal, consistent with DOE's policies and procedures. *See* 68 FR 7990.

tested. Additionally, DOE's cost estimate of $8,300 per basic model includes the testing costs associated with running all the optional tests (*e.g.,* running the low power mode test with the optional refrigeration low power mode verification). DOE used these conservative assumptions in its analysis to avoid underestimating the potential test burden on small BVM manufacturers.

The three small BVM manufacturers, on average, offer 10 unique basic models and have an average annual revenue of approximately $39.3 million.[22] DOE estimates that the average cost for a small BVM manufacturer to re-test all of their BVM basic models would be less than one percent of their annual revenue. The small BVM manufacturer with the highest expected test burden offers 19 BVM models and has an annual revenue of $19.0 million. DOE estimates their re-testing costs could reach $157,700,[23] which represents approximately 0.8 percent of their annual revenue.

DOE has tentatively determined that the proposed amendments in this NOPR would result in minimal cost impacts for small BVM manufacturers. Furthermore, these minimal re-testing costs would not be incurred unless and until amended energy conservation standards for BVMs are adopted and would only apply to BVM basic models shipped with coin or bill payment mechanisms in place. Therefore, DOE initially concludes that the impacts of the proposed test procedure amendments proposed in this NOPR would not have a ''significant economic impact on a substantial number of small entities,'' and that the preparation of an IRFA is not warranted. DOE will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

DOE requests comment on the number of small BVM manufacturers and the cost impacts of this proposed rule on those small manufacturers.

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of BVMs must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including BVMs. (*See generally* 10 CFR part 429.) The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (''PRA''). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. DOE is not proposing to amend the certification and recordkeeping requirements for BVMs.

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA, unless that collection of information displays a currently valid OMB Control Number.

D. Review Under the National Environmental Policy Act of 1969

In this NOPR, DOE proposes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for the BVM test procedure, ''Uniform Test Method for the Measurement of Energy Consumption of Refrigerated Bottled or Canned Vending Machines''. 10 CFR 431.294. DOE has determined that this proposed rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR part 1021, appendix A to subpart D, A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (Aug. 4, 1999) imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

Regarding the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, ''Civil Justice Reform,'' 61 FR 4729 (Feb. 7, 1996), imposes on Federal agencies the general duty to adhere to the following requirements: (1) Eliminate drafting errors and ambiguity, (2) write regulations to minimize litigation, (3) provide a clear legal standard for affected conduct rather than a general standard, and (4) promote simplification and burden reduction. Section 3(b) of Executive Order 12988 specifically requires that Executive agencies make every reasonable effort to ensure that the regulation (1) clearly specifies the preemptive effect, if any, (2) clearly specifies any effect on existing Federal law or regulation, (3) provides a clear legal standard for affected conduct while promoting simplification and burden reduction, (4) specifies the retroactive effect, if any, (5) adequately defines key terms, and (6) addresses other important issues affecting clarity and general draftsmanship under any guidelines issued by the Attorney General. Section 3(c) of Executive Order 12988 requires Executive agencies to review regulations in light of applicable standards in sections 3(a) and 3(b) to

[22] DOE relied on the estimated annual revenue figures from Dun and Bradstreet to determine the annual revenue of the three small BVM manufacturers. (The D&B login is accessible at: *app.dnbhoovers.com/)*

[23] Testing costs of $8,300 per basic model for 19 BVM models ($8,300 x 19 = $157,700).

determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required review and determined that, to the extent permitted by law, the proposed rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (''UMRA'') requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at *energy.gov/gc/office-general-counsel.* DOE examined this proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

H. Review Under the Treasury and General Government Appropriations Act, 1999

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105–277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

DOE has determined, under Executive Order 12630, ''Governmental Actions and Interference with Constitutionally Protected Property Rights'' 53 FR 8859 (March 18, 1988), that this proposed regulation would not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

J. Review Under Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). Pursuant to OMB Memorandum M–19–15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at *www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf.* DOE has reviewed this proposed rule under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use,'' 66 FR 28355 (May 22, 2001), requires Federal agencies to prepare and submit to OMB, a Statement of Energy Effects for any proposed significant energy action. A ''significant energy action'' is defined as any action by an agency that promulgated or is expected to lead to promulgation of a final rule, and that (1) is a significant regulatory action under Executive Order 12866, or any successor order; and (2) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (3) is designated by the Administrator of OIRA as a significant energy action. For any proposed significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use should the proposal be implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

The proposed regulatory action to amend the test procedure for measuring the energy efficiency of BVMs is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; ''FEAA'') Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (''FTC'') concerning the impact of the commercial or industry standards on competition.

The proposed modifications to the test procedure for BVMs would incorporate testing methods contained in certain sections of the following commercial standards: ANSI/ASHRAE Standard 32.1–2017. DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA (*i.e.,* whether it was developed in a manner that fully provides for public participation, comment, and review.) DOE will consult with both the Attorney General and the Chairman of the FTC concerning the impact of these test procedures on competition, prior to prescribing a final rule.

M. Description of Materials Incorporated by Reference

In this NOPR, DOE proposes to incorporate by reference the 2017 test standard published by ANSI/ASHRAE, titled ''Methods of Testing for Rating Refrigerated Vending Machines for Sealed Beverages.'' ANSI/ASHRAE Standard 32.1–2017 is an industry-accepted test procedure that measures capacity and efficiency of BVMs. The test procedure proposed in this NOPR references various sections of ANSI/ASHRAE Standard 32.1–2017 that address definitions, test setup,

instrumentation, test conduct, and calculations. ANSI/ASHRAE Standard 32.1–2017 is readily available at ANSI's website at *webstore.ansi.org.*

DOE also proposes to incorporate by reference the 2008 test standard published by ANSI/AHAM, titled ''Energy And Internal Volume Of Refrigerating Appliances.'' ANSI/AHAM HRF–1–2008 is referenced by ANSI/ASHRAE Standard 32.1–2017 as the industry-accepted method for determining refrigerated volume for BVMs. By reference to ANSI/ASHRAE Standard 32.1–2017, the test procedure proposed in this NOPR refers only to the refrigerated volume section of ANSI/AHAM HRF–1–2008. ANSI/AHAM HRF–1–2008 can be purchased at *webstore.ansi.org/standards/aham/ahamhrf2008.*

V. Public Participation

A. Participation in the Webinar

The time and date for the webinar meeting are listed in the **DATES** section at the beginning of this document. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published at *www.regulations.gov/docket/EERE–2021–BT–TP–0007.* Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has an interest in the topics addressed in this document, or who is representative of a group or class of persons that has an interest in these issues, may request an opportunity to make an oral presentation at the webinar. Such persons may submit to *ApplianceStandardsQuestions@ee.doe.gov.* Persons who wish to speak should include with their request a computer file in WordPerfect, Microsoft Word, PDF, or text (ASCII) file format that briefly describes the nature of their interest in this proposed rulemaking and the topics they wish to discuss. Such persons should also provide a daytime telephone number where they can be reached.

C. Conduct of the Webinar

DOE will designate a DOE official to preside at the webinar/public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the webinar/public meeting. There shall not be discussion of proprietary information, costs or prices, market share, or other commercial matters regulated by U.S. anti-trust laws. After the webinar/public meeting and until the end of the comment period, interested parties may submit further comments on the proceedings and any aspect of the proposed rulemaking.

The webinar will be conducted in an informal, conference style. DOE will present a general overview of the topics addressed in this proposed rulemaking, allow time for prepared general statements by participants, and encourage all interested parties to share their views on issues affecting this proposed rulemaking. Each participant will be allowed to make a general statement (within time limits determined by DOE), before the discussion of specific topics. DOE will permit, as time permits, other participants to comment briefly on any general statements.

At the end of all prepared statements on a topic, DOE will permit participants to clarify their statements briefly. Participants should be prepared to answer questions by DOE and by other participants concerning these issues. DOE representatives may also ask questions of participants concerning other matters relevant to this proposed rulemaking. The official conducting the webinar/public meeting will accept additional comments or questions from those attending, as time permits. The presiding official will announce any further procedural rules or modification of the above procedures that may be needed for the proper conduct of the webinar/public meeting.

A transcript of the webinar will be included in the docket, which can be viewed as described in the Docket section at the beginning of this document. In addition, any person may buy a copy of the transcript from the transcribing reporter.

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule no later than the date provided in the **DATES** section at the beginning of this proposed rule.[24] Interested parties may submit comments using any of the methods described in the **ADDRESSES** section at the beginning of this document.

Submitting comments via www.regulations.gov. The *www.regulations.gov* web page will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to *www.regulations.gov* information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (''CBI'')). Comments submitted through *www.regulations.gov* cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through *www.regulations.gov* before

[24] DOE has historically provided a 75-day comment period for test procedure NOPRs pursuant to the North American Free Trade Agreement, U.S.-Canada-Mexico (''NAFTA''), Dec. 17, 1992, 32 I.L.M. 289 (1993); the North American Free Trade Agreement Implementation Act, Public Law 103–182, 107 Stat. 2057 (1993) (codified as amended at 10 U.S.C.A. 2576) (1993) (''NAFTA Implementation Act''); and Executive Order 12889, ''Implementation of the North American Free Trade Agreement,'' 58 FR 69681 (Dec. 30, 1993). However, on July 1, 2020, the Agreement between the United States of America, the United Mexican States, and the United Canadian States (''USMCA''), Nov. 30, 2018, 134 Stat. 11 (*i.e.,* the successor to NAFTA), went into effect, and Congress's action in replacing NAFTA through the USMCA Implementation Act, 19 U.S.C. 4501 *et seq.* (2020), implies the repeal of E.O. 12889 and its 75-day comment period requirement for technical regulations. Thus, the controlling laws are EPCA and the USMCA Implementation Act. Consistent with EPCA's public comment period requirements for consumer products, the USMCA only requires a minimum comment period of 60 days. Consequently, DOE now provides a 60-day public comment period for test procedure NOPRs.

posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that *www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email. Comments and documents submitted via email also will be posted to *www.regulations.gov.* If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information on a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments.

Include contact information each time you submit comments, data, documents, and other information to DOE. No faxes will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, or text (ASCII) file format. Provide documents that are not secured, written in English and free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email two well-marked copies: One copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

E. Issues on Which DOE Seeks Comment

Although DOE welcomes comments on any aspect of this proposal, DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

(1) DOE requests comment on its proposal to incorporate by reference the most current industry test standard, ANSI/ASHRAE Standard 32.1–2017, including the updated reference to ANSI/AHAM HRF–1–2008 for measuring refrigerated volume. Specifically, DOE requests comment on whether the proposed amendments would affect BVM ratings as measured under the existing test procedure or whether they would impact test burden.

(2) DOE continues to request information on typical loads for non-refrigerated compartments in combination BVMs and, if DOE were to require such loads for testing, the potential impacts on combination BVM energy consumption and test burden.

(3) DOE requests comment on the proposal to specify that non-beverage merchandise shelves not be loaded for testing BVMs. DOE seeks information on how such models are currently tested and on whether this proposal would impact current BVM ratings or test burden.

(4) DOE requests comment on its initial determination to maintain the existing LAPT approach for units that operate only at temperatures above the IAT of 36 °F ± 1 °F. DOE requests comment on its proposal to require testing at the highest integrated average temperature a given basic model is capable of maintaining for units that are only capable of operating at temperatures below the specified IAT of 36 °F ± 1 °F.

(5) DOE requests comment on its proposal to require testing with coin and bill payment mechanisms energized, if they are included in the BVM as shipped. DOE requests comment on whether this approach would result in any additional test burden. DOE additionally requests comment on its proposal to require that any credit card payment mechanisms be disconnected or de-energized, if possible, or in place but set to the lowest energy consuming state, if they cannot be de-energized, for testing. DOE further requests information on the continued use of the 0.20 kWh/day energy use adder for BVMs shipped with no coin or bill payment mechanisms in place. DOE also requests comment on the proposal to not require the use of these amendments until the compliance date of any future amended energy conservation standards for BVMs.

(6) DOE requests comment on its tentative determination to not account for learning-based controls. DOE continues to seek data and information on the implementation and operation of such controls for BVMs.

(7) DOE requests comment on its initial determination to maintain the existing calculation approach to account for operation in refrigeration low power mode. DOE continues to seek information and data on whether the assumed operating period (6 hours) and corresponding energy consumption impact (3 percent) are appropriate for BVMs operating in refrigeration low power mode.

(8) DOE requests comment on the proposed instructions regarding leak mitigation control settings for BVM testing. Specifically, DOE requests information regarding how such controls are currently or expected to be implemented in BVMs, including whether the controls can be controlled by the user.

(9) DOE requests comment on its tentative determination to maintain the existing test procedure approach in section 2.2.5 of appendix B as applicable to connected functions. DOE continues to request information and data on the prevalence of connected functions, the BVM functions associated with them, how often they are used, and their corresponding energy use impacts.

(10) DOE requests any additional information and data on how BVM energy consumption may change over the lifetime of the equipment. DOE also requests comment on whether any performance degradation occurs consistently for all BVMs, or whether the impacts vary depending on equipment type or specific equipment designs.

(11) DOE requests comment on the tentative determination that manufacturers would not incur any additional costs as a result of the proposed amended test procedure. DOE also requests comment on its estimate of per-test costs, should manufacturers re-test their BVM basic models to comply with any future amended BVM energy conservation standards.

(12) DOE requests comment on the number of small BVM manufacturers and the cost impacts of this proposed rule on those small manufacturers.

VI. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this notice of proposed

rulemaking and announcement of public meeting.

List of Subjects in 10 CFR Part 431

Administrative practice and procedure, Confidential business information, Energy conservation test procedures, Incorporation by reference, and Reporting and recordkeeping requirements.

Signing Authority

This document of the Department of Energy was signed on March 17, 2022, by Kelly J. Speakes-Backman, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on March 18, 2022.

Treena V. Garrett

Federal Register Liaison Officer, U.S. Department of Energy.

For the reasons stated in the preamble, DOE is proposing to amend part 431 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

PART 431—ENERGY EFFICIENCY PROGRAM FOR CERTAIN COMMERCIAL AND INDUSTRIAL EQUIPMENT

■ 1. The authority citation for part 431 continues to read as follows:

Authority: 42 U.S.C. 6291–6317; 28 U.S.C. 2461 note.

■ 2. Section 431.292 is amended by revising the definition for ''V'' to read as follows:

* * * * *

V means the refrigerated volume (ft^3) of the refrigerated bottled or canned beverage vending machine, as measured by Appendix C of ANSI/ASHRAE 32.1, including the referenced methodology in AHAM HREF–1–2008 (both incorporated by reference, see § 431.293).

■ 3. Section 431.293 is revised to read as follows:

§ 431.293 Materials incorporated by reference.

(a) Certain material is incorporated by reference into this subpart with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, DOE must publish a document in the **Federal Register** and the material must be available to the public. All approved material is available for inspection at DOE, and at the National Archives and Records Administration (NARA). Contact DOE at: The U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, Sixth Floor, 950 L'Enfant Plaza SW, Washington, DC 20024, (202) 586–9127, *Buildings@ee.doe.gov, https://www.energy.gov/eere/buildings/building-technologies-office.* For information on the availability of this material at NARA, email: *fr.inspection@nara.gov,* or go to: *www.archives.gov/federal-register/cfr/ibr-locations.html.* The material may be obtained from the sources in the following paragraphs of this section.

(b) *ASHRAE.* American Society of Heating, Refrigerating and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329; (404) 636–8400; *www.ashrae.org.*

(1) ANSI/ASHRAE Standard 32.1–2017, (''ANSI/ASHRAE 32.1''), ''Methods of Testing for Rating Refrigerated Vending Machines for Sealed Beverages,'' approved February 2, 2017, IBR approved for § 431.292 and appendix B to this subpart.

(2) [Reserved]

(c) *AHAM.* Association of Home Appliance Manufacturers, 1111 19th Street NW, Suite 402, Washington, DC 20036; (202) 872–5955; *www.aham.org.*

(1) AHAM HRF–1–2008 (''HRF–1–2008''), ''*Energy and Internal Volume of Refrigerating Appliances,*'' including *Errata to Energy and Internal Volume of Refrigerating Appliances,* Correction Sheet issued November 17, 2009, IBR approved for § 431.292 and appendix B to this subpart.

(2) [Reserved]

(d) *ASTM.* ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959; (877) 909–2786; *www.astm.org.*

(1) ASTM E1084–86 (Reapproved 2009), ''Standard Test Method for Solar Transmittance (Terrestrial) of Sheet Materials Using Sunlight,'' approved April 1, 2009, IBR approved for § 431.292.

(2) [Reserved]

Appendix A to Subpart Q of Part 431 [Removed and Reserved]

■ 4. Remove and reserve appendix A to subpart Q of part 431.

■ 5. Appendix B to subpart Q of part 431 is revised to read as follows:

Appendix B to Subpart Q of Part 431—Uniform Test Method for the Measurement of Energy Consumption of Refrigerated Bottled or Canned Beverage Vending Machines

Note: Any representations made with respect to energy use or efficiency to demonstrate compliance with the energy conservation standards at 10 CFR 431.296, for which compliance was required as of January 8, 2019 must be made in accordance with the results of testing pursuant to this appendix using the payment mechanism testing requirements specified in section 2.2.5.1(a) of this appendix. Any representations made on or after the compliance date of any amended energy conservation standards, must be made in accordance with the results of testing pursuant to this appendix and must use the payment mechanism testing requirements specified in section 2.2.5.1(b) of this appendix.

0. Incorporation by reference.

DOE incorporated by reference in § 431.293 the entire standard for AHAM HRF–1–2008 and ANSI/ASHRAE 32.1; however, only enumerated provisions of those documents are applicable to this appendix as follows:

0.1. AHAM HRF–1–2008

(i) Section 4, ''Method for Computing Refrigerated Volume of Refrigerators and Wine Chillers,'' as referenced in section 3.1 of this appendix.

0.2. ANSI/ASHRAE 32.1

(i) Section 3 ''Definitions'' as referenced in section 1 of this appendix.

(ii) Section 4 ''Instruments'' as referenced in section 2 of this appendix.

(iii) Section 5 ''Vending Machine Capacity'' and Normative Appendix C ''Measurement of Volume'' as referenced in sections 2 and 3.1 of this appendix.

(iv) Section 6 ''Test Conditions'' as referenced in section 2 of this appendix.

(v) Section 7.1 ''Test Procedures—General Requirements'' (except Section 7.1.2 ''Functionality'' and Section 7.1.5.1 ''Beverage Temperature Test Packages'') and Section 7.2 ''Energy Consumption Test'' (except Section 7.2.2.6) as referenced in section 2 of this appendix.

1. *General.* In cases where there is a conflict, the language of the test procedure in this appendix takes precedence over ANSI/ASHRAE 32.1.

1.1. *Definitions.* In addition to the definitions specified in Section 3, ''Definitions,'' of ANSI/ASHRAE 32.1 the following definitions are also applicable to this appendix.

Accessory low power mode means a state in which a beverage vending machine's lighting and/or other energy-using systems are in low power mode, but that is not a refrigeration low power mode. Functions that

may constitute an accessory low power mode may include, for example, dimming or turning off lights, but does not include adjustment of the refrigeration system to elevate the temperature of the refrigerated compartment(s).

External accessory standby mode means the mode of operation in which any external, integral customer display signs, lighting, or digital screens are connected to mains power; do not produce the intended illumination, display, or interaction functionality; and can be switched into another mode automatically with only a remote user-generated or an internal signal.

Low power mode means a state in which a beverage vending machine's lighting, refrigeration, and/or other energy-using systems are automatically adjusted (without user intervention) such that they consume less energy than they consume in an active vending environment.

Lowest application product temperature means either:

(a) For units that operate only at temperatures above the integrated average temperature specified in Table 1 of ANSI/ASHRAE 32.1, the lowest integrated average temperature a given basic model is capable of maintaining so as to comply with the temperature stabilization requirements specified in Section 7.2.2.2 of ANSI/ASHRAE 32.1; or

(b) For units that operate only at temperatures below the integrated average temperature specified in Table 1 of ANSI/ASHRAE 32.1, the highest integrated average temperature a given basic model is capable of maintaining so as to comply with the temperature stabilization requirements specified in Section 7.2.2.2 of ANSI/ASHRAE Standard 32.1.

Refrigeration low power mode means a state in which a beverage vending machine's refrigeration system is in low power mode because of elevation of the temperature of the refrigerated compartment(s). To qualify as low power mode, the unit must satisfy the requirements described in section 2.3.2.1 of this appendix.

2. *Test Procedure.* Conduct testing according to Section 4, ''Instruments''; Section 5, ''Vendible Capacity''; Section 6, ''Test Conditions''; Section 7.1, ''Test Procedures—General Requirements'' (except Section 7.1.2 ''Functionality'' and Section 7.1.5.1 ''Beverage Temperature Test Packages''); and Section 7.2, ''Energy Consumption Test'' (except Section 7.2.2.6) of ANSI/ASHRAE 32.1, except as described in the following sections.

2.1. *Lowest Application Product Temperature.* If a refrigerated bottled or canned beverage vending machine is not capable of maintaining an integrated average temperature of 36 °F (±1 °F) during the 24 hour test period, the unit must be tested at the lowest application product temperature, as defined in section 1.1 of this appendix.

2.2. *Equipment Installation and Test Set Up.* Except as provided in this section 2.2 of this appendix, the test procedure for energy consumption of refrigerated bottled or canned beverage vending machines shall be conducted in accordance with the methods specified in Sections 7.1 through 7.2.2.7 under ''Test Procedures'' of ANSI/ASHRAE 32.1.

2.2.1. *Equipment Loading.* Configure refrigerated bottled or canned beverage vending machines to hold the maximum number of standard products.

2.2.1.1. *Non-Beverage Shelves.* Any shelves within the refrigerated compartment(s) intended only for non-beverage merchandise shall not be loaded for testing.

2.2.1.2. *Standard Products.* The standard product shall be standard 12-ounce aluminum beverage cans filled with a liquid with a density of 1.0 grams per milliliter (g/mL) ±0.1 g/mL at 36 °F. For product storage racks that are not capable of vending 12-ounce cans, but are capable of vending 20-ounce bottles, the standard product shall be 20-ounce plastic bottles filled with a liquid with a density of 1.0 g/mL ±0.1 g/mL at 36 °F. For product storage racks that are not capable of vending 12-ounce cans or 20-ounce bottles, the standard product shall be the packaging and contents specified by the manufacturer in product literature as the standard product (*i.e.,* the specific merchandise the refrigerated bottled or canned beverage vending machine is designed to vend).

2.2.1.3. *Standard Test Packages.* A standard test package is a standard product, as specified in section 2.2.1.2 of this appendix, altered to include a temperature-measuring instrument at its center of mass.

2.2.2. *Sensor Placement.* The integrated average temperature of next-to-vend beverages shall be measured in standard test packages in the next-to-vend product locations specified in Section 7.1.5.2 of ANSI/ASHRAE 32.1. Do not run the thermocouple wire and other measurement apparatus through the dispensing door; the thermocouple wire and other measurement apparatus must be configured and sealed so as to minimize air flow between the interior refrigerated volume and the ambient room air. If a manufacturer chooses to employ a method other than routing thermocouple and sensor wires through the door gasket and ensuring the gasket is compressed around the wire to ensure a good seal, then it must maintain a record of the method used in the data underlying that basic model's certification pursuant to 10 CFR 429.71.

2.2.3. *Vending Mode Test Period.* The vending mode test period begins after temperature stabilization has been achieved, as described in ANSI/ASHRAE 32.1 Section 7.2.2.2 and continues for 18 hours for equipment with an accessory low power mode or for 24 hours for equipment without an accessory low power mode. For the vending mode test period, equipment that has energy-saving features that cannot be disabled shall have those features set to the most energy-consuming settings, except for as specified in section 2.2.4 of this appendix. In addition, all energy management systems shall be disabled. Provide, if necessary, any physical stimuli or other input to the machine needed to prevent automatic activation of low power modes during the vending mode test period.

2.2.4. *Accessory Low Power Mode Test Period.* For equipment with an accessory low power mode, the accessory low power mode may be engaged for 6 hours, beginning 18 hours after the temperature stabilization requirements established in Section 7.2.2.2 of ANSI/ASHRAE 32.1 have been achieved, and continuing until the end of the 24-hour test period. During the accessory low power mode test, operate the refrigerated bottled or canned beverage vending machine with the lowest energy-consuming lighting and control settings that constitute an accessory low power mode. The specification and tolerances for integrated average temperature in Table 2 of ANSI/ASHRAE 32.1 still apply, and any refrigeration low power mode must not be engaged. Provide, if necessary, any physical stimuli or other input to the machine needed to prevent automatic activation of refrigeration low power modes during the accessory low power mode test period.

2.2.5. *Accessories.* Unless specified otherwise in this appendix or ANSI/ASRAE 32.1, all standard components that would be used during normal operation of the basic model in the field and are necessary to provide sufficient functionality for cooling and vending products in field installations (*i.e.,* product inventory, temperature management, product merchandising (including, *e.g.,* lighting or signage), product selection, and product transport and delivery) shall be in place during testing and shall be set to the maximum energy-consuming setting if manually adjustable. Components not necessary for the inventory, temperature management, product merchandising (*e.g.,* lighting or signage), product selection, or product transport and delivery shall be de-energized. If systems not required for the primary functionality of the machine as stated in this section cannot be de-energized without preventing the operation of the machine, then they shall be placed in the lowest energy consuming state. Components with controls that are permanently operational and cannot be adjusted by the machine operator shall be operated in their normal setting and consistent with the requirements of sections 2.2.3 and 2.2.4 of this appendix. The specific components and accessories listed in the subsequent sections shall be operated as stated during the test, except when controlled as part of a low power mode during the low power mode test period.

2.2.5.1. *Payment Mechanisms.*

(a) For purposes of demonstrating compliance with the energy conservation standards specified in § 431.296(b) for which compliance was required as of January 8, 2019, refrigerated bottled or canned beverage vending machines must be tested with no payment mechanism in place, the payment mechanism in-place but de-energized, or the payment mechanism in place but set to the lowest energy consuming state, if it cannot be de-energized. A default payment mechanism energy consumption value of 0.20 kWh/day shall be added to the primary rated energy consumption per day, as noted in section 2.3 of this appendix.

(b) Refrigerated bottled or canned beverage vending machines required to comply with any amended energy conservation standards must be tested with any coin and or bill payment mechanisms shipped with the

model in place and energized. Credit card reader payment mechanisms shall be tested with the payment mechanism in-place but de-energized, or the payment mechanism in place but set to the lowest energy consuming state, if it cannot be de-energized. For refrigerated bottled or canned beverage vending machines shipped with no payment mechanism in place, or only a credit card reader payment mechanism in place, a default payment mechanism energy consumption value of 0.20 kWh/day shall be added to the primary rated energy consumption per day, as noted in section 2.3 of this appendix.

2.2.5.2. *Internal Lighting.* All lighting that is contained within or is part of the internal physical boundary of the refrigerated bottled or canned beverage vending machine, as established by the top, bottom, and side panels of the equipment, shall be placed in its maximum energy consuming state.

2.2.5.3. *External Customer Display Signs, Lights, and Digital Screens.* All external customer display signs, lights, and digital screens that are independent from the refrigeration or vending performance of the refrigerated bottled or canned beverage vending machine must be disconnected, disabled, or otherwise de-energized for the duration of testing. Customer display signs, lighting, and digital screens that are integrated into the beverage vending machine cabinet or controls such that they cannot be de-energized without disabling the refrigeration or vending functions of the refrigerated bottled or canned beverage vending machine or modifying the circuitry must be placed in external accessory standby mode, if available, or their lowest energy-consuming state. Digital displays that also serve a vending or money processing function must be placed in the lowest energy-consuming state that still allows the money processing feature to function.

2.2.5.4. *Anti-sweat or Other Electric Resistance Heaters.* Anti-sweat or other electric resistance heaters must be operational during the entirety of the test procedure. Units with a user-selectable setting must have the heaters energized and set to the most energy-consumptive position. Units featuring an automatic, non-user-adjustable controller that turns on or off based on environmental conditions must be operating in the automatic state. Units that are not shipped with a controller from the point of manufacture, but are intended to be used with a controller, must be equipped with an appropriate controller when tested.

2.2.5.5. *Condensate Pan Heaters and Pumps.* All electric resistance condensate heaters and condensate pumps must be installed and operational during the test. Prior to the start of the test, including the 24 hour period used to determine temperature stabilization prior to the start of the test period, as described in ANSI/ASHRAE 32.1 Section 7.2.2.2, the condensate pan must be dry. For the duration of the test, including the 24 hour time period necessary for temperature stabilization, allow any condensate moisture generated to accumulate in the pan. Do not manually add or remove water from the condensate pan at any time during the test. Any automatic controls that initiate the operation of the condensate pan heater or pump based on water level or ambient conditions must be enabled and operated in the automatic setting.

2.2.5.6. *Illuminated Temperature Displays.* All illuminated temperature displays must be energized and operated during the test the same way they would be energized and operated during normal field operation, as recommended in manufacturer product literature, including manuals.

2.2.5.7. *Condenser Filters.* Remove any nonpermanent filters provided to prevent particulates from blocking a model's condenser coil.

2.2.5.8. *Security Covers.* Remove any devices used to secure the model from theft or tampering.

2.2.5.9. *General Purpose Outlets.* During the test, do not connect any external load to any general purpose outlets available on a unit.

2.2.5.10. *Crankcase Heaters and Other Electric Resistance Heaters for Cold Weather.* Crankcase heaters and other electric resistance heaters for cold weather must be operational during the test. If a control system, such as a thermostat or electronic controller, is used to modulate the operation of the heater, it must be activated during the test and operated in accordance with the manufacturer's instructions.

2.2.5.11. *Refrigerant Leak Mitigation Controls.* If the use of leak mitigation controls is a user-controlled function (*e.g.,* if the use of the controls is optional and intended only for specific installations), the controls shall be de-energized or in their lowest energy consuming state during testing. If leak mitigation controls are not user-controlled and are always operational, the controls shall be energized and operational for testing.

2.3. *Determination of Daily Energy Consumption.* The daily energy consumption shall be equal to the primary rated energy consumption per day (ED), in kWh, determined in accordance with the calculation procedure in Section 7.2.3.1, ''Calculation of Daily Energy Consumption,'' of ANSI/ASHRAE 32.1 plus the default payment mechanism energy consumption value from section 2.2.5.1 of this appendix, if applicable. In Section 7.2.3.1 of ANSI/ASHRAE 32.1, the energy consumed during the test shall be the energy measured during the vending mode test period and accessory low power mode test period, as specified in sections 2.2.3 and 2.2.4 of this appendix, as applicable.

2.3.1. *Refrigeration Low Power Mode.* For refrigerated bottled or canned beverage vending machines with a refrigeration low power mode, multiply the value determined in section 2.3 of this appendix by 0.97 to determine the daily energy consumption of the unit tested. For refrigerated bottled or canned beverage vending machines without a refrigeration low power mode, the value determined in section 2.3 of this appendix is the daily energy consumption of the unit tested.

2.3.1.1. *Refrigeration Low Power Mode Validation Test Method.* This test method is not required for the certification of refrigerated bottled or canned beverage vending machines. To verify the existence of a refrigeration low power mode, initiate the refrigeration low power mode in accordance with manufacturer instructions contained in product literature and manuals, after completion of the 6-hour low power mode test period. Continue recording all the data specified in Section 7.2.2.3 of ANSI/ASHRAE 32.1 until existence of a refrigeration low power mode has been confirmed or denied. The refrigerated bottled or canned beverage vending machine shall be deemed to have a refrigeration low power mode if either:

(a) The following three requirements have been satisfied:

(1) The instantaneous average next-to-vend beverage temperature must reach at least 4 °F above the integrated average temperature or lowest application product temperature, as applicable, within 6 hours.

(2) The instantaneous average next-to-vend beverage temperature must be maintained at least 4 °F above the integrated average temperature or lowest application product temperature, as applicable, for at least 1 hour.

(3) After the instantaneous average next-to-vend beverage temperature is maintained at or above 4 °F above the integrated average temperature or lowest application product temperature, as applicable, for at least 1 hour, the refrigerated beverage vending machine must return to the specified integrated average temperature or lowest application product temperature, as applicable, automatically without direct physical intervention.

(b) Or, the compressor does not cycle on for the entire 6 hour period, in which case the instantaneous average beverage temperature does not have to reach 4 °F above the integrated average temperature or lowest application product temperature, as applicable, but, the equipment must still automatically return to the integrated average temperature or lowest application product temperature, as applicable, after the 6 hour period without direct physical intervention.

2.3.2. *Calculations and Rounding.* In all cases, the daily energy consumption must be calculated with raw measured values and the final result rounded to units of 0.01 kWh/day.

3. *Determination of Refrigeration Volume and Surface Area.*

3.1. *Refrigerated Volume.* Determine the ''refrigerated volume'' of refrigerated bottled or canned beverage vending machines in accordance with Section 5.3, ''Refrigerated Volume,'' and Appendix C, ''Measurement of Volume,'' of ANSI/ASHRAE 32.1 including the referenced methodology in Section 4, ''Method for Computing Refrigerated Volume of Refrigerators and Wine Chillers,'' of AHAM HRF–1–2008. For combination vending machines, the ''refrigerated volume'' does not include any non-refrigerated compartment(s).

3.2. *Determination of Surface Area.* Note: This section is not required for the certification of refrigerated bottled or canned beverage vending machines. Determine the

surface area of each beverage vending machine as the length multiplied by the height of outermost surface of the beverage vending machine cabinet, measured from edge to edge excluding any legs or other protrusions that extend beyond the dimensions of the primary cabinet. Determine the transparent and non-transparent areas on each side of a beverage vending machine as the total surface area of material that is transparent or is not transparent, respectively.

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