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[Docket No. EERE–2010–BT–TP–0036]

RIN 1904–AC38

Energy Conservation Program: Test Procedure for Automatic Commercial Ice Makers

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

ACTION: Final rule.

SUMMARY: On April 4, 2011, the U.S. Department of Energy (DOE or the Department) issued a notice of proposed rulemaking (NOPR) to amend the test procedure for automatic commercial ice makers (ACIM). That NOPR serves as the basis for today's action. This final rule amends the current test procedure for automatic commercial ice makers. The changes include updating the incorporation by reference of industry test procedures to the most current published versions, expanding coverage of the test procedure to all batch type and continuous type ice makers with capacities between 50 and 4,000 pounds of ice per 24 hours, standardizing test results based on ice hardness for continuous type ice makers, clarifying the test methods and reporting requirements for automatic ice makers designed to be connected to a remote compressor rack, and discontinuing the use of a clarified energy use equation.

DATES: The effective date of this rule is February 10, 2012. The final rule changes will be mandatory for equipment testing starting January 7, 2013. Representations either in writing or in any broadcast advertisement respecting energy consumption of automatic commercial ice makers must also be made using the revised DOE test procedure on January 7, 2013.

The incorporation by reference of certain publications listed in this final rule is approved by the Director of the Office of the **Federal Register** as of February 10, 2012.

ADDRESSES: The docket is available for review at regulations.gov, including **Federal Register** notices, public meeting attendee lists and transcripts, comments, and other supporting documents/materials. All documents in the docket are listed in the regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

A link to the docket Web page can be found at: *http://www1.eere.energy.gov/buildings/appliance_standards/commercial/automatic_ice_making_equipment.html.* This Web page will contain a link to the docket for this notice on the regulations.gov site. The regulations.gov Web page will contain simple instructions on how to access all documents, including public comments, in the docket. For further information on how to review the docket, contact Ms. Brenda Edwards at (202) 586–2945 or by email: *Brenda.Edwards@ee.doe.gov.*

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SUPPLEMENTARY INFORMATION: This final rule incorporates by reference into Part 431 the following industry standards:

(1) Air Conditioning, Heating, and Refrigeration Institute (AHRI) Standard 810–2007 with Addendum 1, ''Performance Rating of Automatic Commercial Ice-Makers,'' March 2011; and

(2) American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 29–2009, ''Method of Testing Automatic Ice Makers,'' (including Errata Sheets 1 and 2, issued April 8, 2010 and April 12, 2011), approved January 28, 2009.

Copies of AHRI standards can be obtained from the Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Blvd., Suite 500, Arlington, VA 22201, (703) 524–8800, *ahri@ahrinet.org,* or *http://www.ahrinet.org.*

Copies of ASHRAE standards can be purchased from the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle NE., Atlanta, GA 30329, (404) 636–8400, *ashrae@ashrae.org,* or *http://www.ashrae.org.*

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I. Authority and Background

A. Authority

Title III of the Energy Policy and Conservation Act (42 U.S.C. 6291, *et seq.;* ''EPCA'') sets forth a variety of provisions designed to improve energy efficiency. (All references to EPCA refer to the statute as amended through the Energy Independence and Security Act of 2007 (EISA 2007), Public Law 110–140 (Dec. 19, 2007)). Part C of Title III, which was subsequently redesignated as Part A–1 in the U.S. Code for editorial reasons (42 U.S.C. 6311–6317), establishes an energy conservation program for certain industrial equipment. This includes automatic commercial ice makers, the subject of today's rulemaking.

DOE's energy conservation program, established under EPCA, consists essentially of four parts: (1) Testing; (2) labeling; (3) Federal energy conservation standards; and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers of covered equipment must use (1) as the basis for certifying to DOE that their equipment complies with the applicable energy conservation standards adopted under EPCA; and (2) for making representations about the efficiency of those pieces of equipment. Similarly, DOE must use these test requirements to determine whether the equipment complies with relevant standards promulgated under EPCA. (42 U.S.C. 6315(b), 6295(s), and 6316(a)) The current test procedure for automatic commercial ice makers appears under title 10 of the Code of Federal Regulations (CFR) part 431, subpart H.

EPCA prescribes that the test procedure for automatic commercial ice makers shall be the Air-Conditioning and Refrigeration Institute (ARI) Standard 810–2003, ''Performance Rating of Automatic Commercial Ice-Makers.'' (42 U.S.C. 6314(a)(7)(A)) EPCA also provides that if ARI Standard 810–2003 is revised, the Secretary of Energy (Secretary) shall amend the DOE test procedure as necessary to be consistent with the amended ARI Standard unless the Secretary determines, by rule, that to do so would not meet the requirements for test procedures set forth in EPCA. (42 U.S.C. 6314(a)(7)(B)) Because ARI Standard 810 has been updated from the 2003 version, DOE must amend the DOE test procedure to reflect these updates, unless doing so would not meet the requirements for a test procedure, as set forth in EPCA. (42 U.S.C. 6314(a)(7)(B)(i))

In addition, EPCA prescribes energy conservation standards for automatic commercial ice makers that produce cube type ice with capacities between 50 and 2,500 pounds of ice per 24-hour period. (42 U.S.C. 6313(d)(1)) EPCA also requires the Secretary to review these standards and determine, by January 1, 2015, whether amending the applicable standards is technically feasible and economically justified. (42 U.S.C. 6313(d)(3)) DOE is currently undertaking a standards rulemaking (Docket No. EERE–2010–BT–STD–0037), concurrent with this test procedure rulemaking, to determine if amended standards are technically feasible and economically justified for automatic commercial ice makers covered by the standards set in the Energy Policy Act of 2005 (EPACT 2005). In the energy conservation standards rulemaking, DOE is also proposing, under 42 U.S.C. 6313(d)(2), to adopt standards for other types of ice makers that are not covered in 42 U.S.C. 6313(d)(1) and to expand the covered capacity range to ice makers with capacities up to 4,000 pounds of ice per 24 hours. In this final rule, DOE is amending the test procedure for automatic commercial ice makers to be consistent with the expanded scope being considered in the ACIM energy conservation standards rulemaking.

In addition, EPCA requires DOE to conduct an evaluation of each class of covered equipment at least once every 7 years to determine whether, among other things, to amend the test procedure for such equipment. (42 U.S.C. 6314(a)(1)(A)) The review and amendment of the test procedure for automatic commercial ice makers in this final rule notice fulfills DOE's obligation under EPCA to evaluate the test procedure for automatic commercial ice makers every 7 years. EPCA also requires that if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6314(b))

B. Background

EPCA, as amended by EPACT 2005, prescribes that the test procedure for automatic commercial ice makers shall be the ARI Standard 810–2003, ''Performance Rating of Automatic Commercial Ice-Makers.'' (42 U.S.C. 6314(a)(7)(A)) Pursuant to EPCA, on December 8, 2006, DOE published a final rule (the 2006 en masse final rule) that, among other things, adopted the test procedure specified in ARI Standard 810–2003, with a revised method for calculating energy use. DOE adopted a clarified energy use rate equation to specify that the energy use be calculated using the entire mass of ice produced during the testing period, normalized to 100 pounds of ice produced. 71 FR 71340, 71350 (Dec. 8, 2006). The DOE test procedure also incorporated by reference the ANSI/ASHRAE Standard 29–1988 (Reaffirmed 2005) (ASHRAE Standard 29–1988 (RA 2005)), ''Method of Testing Automatic Ice Makers,'' as the method of test.

Since the publication of the 2006 en masse final rule, ARI merged with the Gas Appliance Manufacturers Association (GAMA) to form the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) and updated its ice maker test procedure to reflect changes in the industry. The new test procedure, AHRI Standard 810–2007, amends the previous test procedure, ARI Standard 810–2003, to:

1. Expand the capacity range of covered equipment to between 50 and 4,000 pounds of ice per 24 hours at standard rating conditions;
2. Provide definitions and specific test procedures for batch type and continuous type ice makers; and
3. Provide a definition for ice hardness factor, which is the fraction of frozen ice in the ice product of continuous type ice machines.

The industry test procedure being considered in this rulemaking, AHRI Standard 810–2007, references the previous ANSI/ASHRAE Standard 29–1988 (RA 2005). The current DOE test procedure also references ANSI/ASHRAE Standard 29–1988 (RA 2005). However, ASHRAE updated its test procedure in 2009 to ANSI/ASHRAE Standard 29–2009 to include provisions for measuring the performance of batch type and continuous type ice makers.[1]

[1] ASHRAE has also issued two errata sheets to ANSI/ASHRAE Standard 29–2009, issued April 8, 2010 and April 12, 2010, respectively. These errata serve only to clarify equations that are part of the ice hardness calculation described in normative annex A, Table A1; they do not change the content

In March 2011, AHRI published an addendum to AHRI Standard 810–2007, AHRI Standard 810 with Addendum 1. This addendum revised the definition of ''potable water use rate'' and added new definitions of ''purge or dump water'' and ''harvest water'' that more accurately describe the water consumption of automatic commercial ice makers. This change only affects measurement of the potable water use of automatic commercial ice makers. Because the amended DOE test procedure adopted in this final rule does not require the measurement of potable water, this change does not impact the DOE test procedure for automatic commercial ice makers.

EPCA requires that if DOE determines that a test procedure amendment is warranted, DOE must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6314(b)) In accordance with this requirement, DOE published the proposed test procedure amendments in the ACIM test procedure NOPR, which was published in the **Federal Register** on April 4, 2011. 76 FR 18428 (April 2011 NOPR). On April 29, 2011, DOE held a public meeting (April 2011 NOPR public meeting) to discuss the amendments proposed in the April 2011 NOPR and provide an opportunity for interested parties to comment. DOE also received written comments from interested parties regarding the proposed amendments to the test procedure for automatic commercial ice makers and has considered both the oral comments received at the public meeting and the written comments, to the extent possible, when finalizing this final rule. These comments and DOE's responses are presented in section III, Discussion.

II. Summary of the Final Rule

This final rule amends the existing test procedure for automatic commercial ice makers. Specifically, DOE is incorporating revisions to the DOE test procedure that:

1. Update the industry test procedure references to AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009;

2. Expand the scope of the test procedure to include equipment with capacities from 50 to 4,000 pounds of ice per 24 hours;

3. Provide test methods for continuous type ice makers and standardize the measurement of energy and water use for continuous type ice makers with respect to ice hardness;

4. Clarify the test method and reporting requirements for remote condensing automatic commercial ice makers designed for connection to remote compressor racks; and

5. Discontinue the use of a clarified energy use rate calculation and instead calculate energy use per 100 pounds of ice as specified in ANSI/ASHRAE Standard 29–2009.

These amendments make changes to the definitions set forth in 10 CFR 431.132 and to the current test procedures in 10 CFR 431.134.

The amended test procedure established in today's final rule will become effective 30 days after publication in the **Federal Register.** DOE believes the test procedure amendments adopted in today's final rule will not alter the measured energy consumption and condenser water consumption of any covered equipment. As such, for automatic commercial ice makers for which energy conservation standards were set in EPACT 2005, use of the revised test procedure for showing compliance with DOE's energy conservation standards will be required starting 360 days after publication in the **Federal Register.** For equipment not covered by the standards set forth in EPACT 2005, use of the amended test procedure to show compliance with energy conservation standards will be required on the compliance date of any energy conservation standards established for that equipment. Consistent with EPCA, representations either in writing or in any broadcast advertisement respecting energy consumption of any automatic commercial ice makers covered under this test procedure final rule will be required to be made based on the amended test procedure starting 360 days after publication of this final rule in the **Federal Register.** (42 U.S.C. 6314(d)(1)) For more specific information on DOE's conclusion that the amended test procedure will not affect the measured energy or water consumption of covered equipment and further discussion of compliance dates, see the **DATES** section and section III.A.6 of this document.

III. Discussion

Section III.A discusses all the revisions to the test procedure incorporated in this final rule and discusses the test procedure compliance date. This section also presents the comments received on these topics during the April 2011 NOPR public meeting and in the associated comment period and DOE's responses to them.

Responses to comments addressing topics other than test procedure revisions adopted in this final rule appear in section III.B, which provides responses to comments in the following subject areas:

1. Test Method for Modulating Capacity Automatic Commercial Ice Makers
2. Treatment of Tube Type Ice Machines
3. Quantification of Auxiliary Energy Use
4. Measurement of Storage Bin Effectiveness
5. Establishment of a Metric for Potable Water Used in Making Ice
6. Standardization of Water Hardness for Measurement of Potable Water Used in Making Ice
7. Testing of Batch Type Ice Makers at the Highest Purge Setting
8. Consideration of Space Conditioning Loads
9. Burden Due to Cost of Testing

A. Amendments to the Test Procedure

Today's final rule contains the following amendments to the test procedure in 10 CFR 431, subpart H.

1. Update References to Industry Standards to Most Current Versions

The current DOE test procedure for automatic commercial ice makers, established in the 2006 en masse final rule, adopts ARI Standard 810–2003 as the test procedure used to measure the energy consumption of a piece of equipment to establish compliance with energy conservation standards set in EPACT 2005. 71 FR at 71350 (Dec. 8, 2006). The DOE test procedure also references ANSI/ASHRAE Standard 29–1988 (RA 2005).

Since publication of the 2006 en masse final rule, AHRI and ASHRAE have published revised standards, namely AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 (including Errata Sheets 1 and 2). AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 amend the previous test procedures by expanding the capacity range to 4,000 pounds per day and providing for the testing of continuous type ice makers. AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 are designed to be used together to test automatic commercial ice makers. AHRI Standard 810–2007 with Addendum 1 specifies the standard rating conditions and provides relevant definitions of equipment, scope, and calculated or measured values. ANSI/ASHRAE Standard 29 specifies how to conduct the test procedure, including the technical requirements and calculations.

or results of the test procedure. In this document, all subsequent references to ''ANSI/ASHRAE Standard 29–2009'' will refer to ANSI/ASHRAE Standard 29–2009, including all errata presented in Errata Sheets 1 and 2.

In the April 2011 NOPR, DOE proposed to adopt AHRI Standard 810–2007 and ANSI/ASHRAE Standard 29–2009 as the DOE test procedure. 76 FR at 18431 (April 4, 2011). AHRI Standard 810–2007 with Addendum 1 was not published in time for DOE to include it in the NOPR. At the April 2011 NOPR public meeting and in subsequent written comments, AHRI, Manitowoc Ice (Manitowoc), Scotsman Industries (Scotsman), Follett Corporation (Follett), and the Northwest Energy Efficiency Alliance (NEEA) supported this proposal (AHRI, No. 0005 at p. 23; Manitowoc, No. 0009 at p. 1; Scotsman, No. 0010 at p. 1; Follett, No. 0008 at p. 1; NEEA, No. 0013 at p. 2)[2] Pacific Gas & Electric, Southern California Edison, San Diego Gas and Electric, and Southern California Gas Company, hereafter referred to as the California Investor Owned Utilities (CA IOUs), submitted a joint comment that also supported adopting AHRI Standard 810–2007 and ASHRAE Standard 29–2009. (CA IOUs, No. 0011 at pp. 1–2) AHRI also recommended that DOE adopt AHRI standard 810–2007 with Addendum 1, pointing out that the addendum was added in March 2011 and has new definitions for ''dump and purge water'' and ''harvest water.'' AHRI added that the addendum also clarifies how potable water usage rate is calculated. (AHRI, No. 0015 at p. 1) DOE did not receive any dissenting comments generally regarding reference to the updated industry standards, nor regarding AHRI Standard 810–2007 with Addendum 1.

DOE reviewed AHRI 810–2007 with Addendum 1 and determined that this revised version of the AHRI Standard 810–2007 test procedure meets the EPCA requirements for a test procedure in that it is reasonably designed to produce test results that reflect the energy use of covered equipment during a representative cycle of use and is not unduly burdensome to conduct. (42 U.S.C. 6314(a)(2))

DOE believes AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 are the most up-to-date and commonly used test procedures for automatic commercial ice makers in the industry and are the most appropriate to cover all equipment included in the scope of this rulemaking. Thus, in today's final rule, DOE is updating the DOE test procedure for automatic commercial ice makers to reference the most current versions of the industry test procedures, AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009.

2. Expand Capacity Range to Larger Capacity Equipment

DOE's existing test procedure references ARI Standard 810–2003, which limits the testing provisions to a capacity range of 50 to 2,500 pounds of ice per 24 hours. In AHRI Standard 810–2007, AHRI expanded the capacity range to include automatic commercial ice makers having a harvest capacity between 50 and 4,000 pounds of ice per 24 hours at standard rating conditions due to changes in the products offered by manufacturers. Specifically, some manufacturers offer larger capacity units that exceed the capacity range of the previous test procedure. AHRI's expansion of the capacity range does not affect the way ice makers are tested; it only provides for the same test procedure to be applied to larger capacity ice makers.

Consistent with referenced industry test procedures, DOE proposed in the April 2011 NOPR to expand the capacity range of the DOE test procedure to include automatic commercial ice makers with harvest rates between 50 and 4,000 pounds of ice per 24 hours. 76 FR at 18431 (April 4, 2011). In response to this proposal, Manitowoc, AHRI, Follett, Scotsman, the CA IOUs, and NEEA commented that 50 to 4,000 pounds per day was an appropriate capacity range for this equipment. (Manitowoc, No. 0009 at p. 1; AHRI, No. 0005; Follett, No. 0008 at p. 1; Scotsman, No. 0010 at p. 1; CA IOUs, No. 0011 at pp. 1–2; NEEA, No. 0013 at p. 1) Manitowoc further commented that there are some industrial applications of ice makers, at airports or other venues with very high ice consumption, but that larger capacity industrial-scale equipment was already inherently more efficient. (Manitowoc, No. 0005 at p. 26) NEEA commented that it is inclined to agree that equipment with capacities greater than 4,000 pounds of ice per day need not be included in the scope of coverage because, while these types of machines can probably be rated using the test procedure, environmental chamber issues would impose a potentially significant burden on manufacturers who are not so equipped. NEEA also agreed with Manitowoc that machines of capacities greater than 4,000 pounds per day are inherently at least a little more energy efficient per pound of ice produced than similar smaller machines. (NEEA, No. 0013 at pp. 1–2) AHRI added that ice makers producing more than 4000 pounds of ice per 24 hours are usually used in industrial applications that are outside the scope of this rulemaking, as justified by the EPACT 2005, which gives DOE the authority to develop energy conservation standards for automatic commercial ice makers only. (AHRI, No. 0015 at p. 2)

DOE agrees with commenters that 4,000 pounds of ice produced per a 24 hour period is a reasonable maximum capacity limit for automatic commercial ice makers. Consequently, DOE is establishing in this final rule the applicable capacity range of the test procedure for automatic commercial ice makers as the same capacity range established in AHRI 810–2007 with Addendum 1, namely 50 to 4,000 pounds of ice per 24 hours.

3. Include Test Methods for Continuous Type Ice Makers

In the April 2011 NOPR, DOE proposed including test methods as defined in AHRI Standard 810–2007 and ANSI/ASHRAE Standard 29–2009 for continuous type ice makers, as well as an additional method to scale their energy consumption and water consumption with respect to the latent heat capacity contained in the ice compared to the latent heat capacity of the same mass of completely frozen ice. 76 FR at 18432 (April 4, 2011). The following sections discuss DOE's specific proposals, comments submitted by interested parties on these proposals, DOE's responses, and the amendments DOE is adopting in today's final rule.

a. Definitions and Referenced Industry Test Methods

AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 have provisions that allow for the testing of continuous type ice makers. The previous versions of these standards, ARI Standard 810–2003 and ANSI/ASHRAE Standard 29–1988 (RA 2005), as referenced in the current DOE test procedure, do not include a method for testing continuous type ice makers. The revised ANSI/ASHRAE Standard 29–2009 adopts definitions for a ''continuous type ice maker'' and a ''batch type ice maker.'' A continuous type ice maker is defined as an ice maker that continually freezes and harvests ice at the same time. Continuous type ice makers primarily produce flake and nugget ice. A batch type ice maker is defined as an ice maker that has alternate freezing and harvesting periods, including machines

[2] In the following discussion, comments will be presented along with a notation in the form ''AHRI, No. 0005 at p. 23,'' which identifies a written comment DOE received and included in the docket of this rulemaking. DOE refers to comments based on when the comment was submitted in the rulemaking process. This particular notation refers to a comment (1) By AHRI, (2) in document number 0005 of the docket (available at regulations.gov), and (3) appearing on page 23.

that produce cube type ice, tube type ice, and fragmented ice. AHRI Standard 810–2007 with Addendum 1 adopts the same definition for a continuous type ice maker, but refers to ice makers that have alternate freezing and harvesting periods as ''cube type ice makers.'' The AHRI Standard 810–2007 definition further clarifies that in this definition the word ''cube'' does not refer to the specific shape or size of ice produced. Because of this, ANSI/ASHRAE Standard 29–2009 includes the statement that batch type ice makers are also referred to as cube type ice makers.

In the April 2011 NOPR, DOE proposed to refer to an ice maker with alternate freezing and harvesting periods as a ''batch type ice maker,'' so that it is not confused with an ice maker that produces only cube type ice. DOE believes that referring to this type of ice maker as a ''cube type ice maker'' could be confusing, since not all batch type ice makers produce ice that fits the ''cube type ice'' definition established in the 2006 en masse final rule. 71 FR at 71372 (Dec. 8, 2006). Rather, batch type ice makers include, but are not limited to, cube type ice makers. DOE wishes to establish this differentiation because ice makers that produce cube type ice with capacities between 50 and 2,500 pounds of ice per 24 hours are currently covered by energy conservation standards that are established in EPCA, while batch type ice makers that produce other than cube type ice and cube type ice makers with capacities between 2,500 and 4,000 pounds of ice per 24 hours are not currently covered by DOE energy conservation standards. In the April 2011 NOPR (76 FR at 18444 (April 4, 2011)), DOE proposed adding definitions to 10 CFR 431.132 for ''batch type ice maker,'' which would refer to ice makers that alternate freezing and harvesting periods, and ''continuous type ice maker, '' which would refer to ice makers that continuously freeze and harvest at the same time.

In addition to these definitions, DOE proposed to adopt AHRI Standard 810–2007 as the referenced DOE test procedure, including referencing ANSI/ASHRAE Standard 29–2009 as the method of test. 76 FR at 18432 (April 4, 2011). This would expand the current DOE test procedure to provide a method for testing continuous type ice makers, in addition to batch type ice makers.

At the April 2011 NOPR public meeting and in written comments, both energy efficiency advocates and manufacturers agreed that continuous type ice makers should be included in the standards. (Follett, No. 0008 at p. 1; Manitowoc, No. 0009 at p. 1; Scotsman, No. 0010 at p. 1; CA IOUs, No. 0011 at pp. 1–2; NEEA, No. 0013 at p. 1) The CA IOUs and Manitowoc added that the coverage of continuous type equipment is important because continuous type machines represent up to 20 percent of the total market based on energy use today and continue to grow in market share; thus, establishing a test procedure in this rulemaking and corresponding energy conservation standards for these equipment types would ensure that significant energy savings are captured. (CA IOUs, No. 0011 at p. 2; Manitowoc, No. 0009 at p. 1)

DOE agrees with commenters that it is logical and appropriate to include test procedures for continuous type ice makers in this test procedure revision. In today's final rule, DOE is adopting definitions and test procedures for batch type and continuous type ice makers. The test procedure for testing continuous type ice makers will be used in conjunction with any potential energy conservation standards for automatic commercial ice makers that produce flake or nugget ice.

To remove any uncertainty regarding the current applicability of standards for ice makers that produce cube type ice with capacities between 50 and 2,500 pounds per 24 hours, DOE is slightly modifying the proposed definition for batch type ice makers, as well as adding language to the definition for cube type ice and scope in the final rule. Specifically, DOE is removing the clarification of AHRI's definition of cube type ice maker in the definition of batch type ice maker, specifying that where there is inconsistency between AHRI and DOE's definitions of cube type ice, the DOE definition takes precedence, and noting that all references to cube type ice makers in AHRI Standard 810–2007 shall apply to all batch type automatic commercial ice makers only. DOE believes this removes, to the extent possible, any potential ambiguity regarding the nomenclature and coverage of batch type ice makers that produce cube type ice and batch type ice makers that produce other than cube type ice (such as fragmented ice makers) in the DOE test procedure. DOE is also updating the definition for continuous type ice makers to be consistent with that adopted in AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009.

b. Standardize Ice Hardness for Continuous Type Ice Makers

Continuous type ice makers typically produce ice that is not completely frozen. This means that there is some liquid water content in the total mass of ice product produced by continuous type ice makers. The specific liquid water content can be described in terms of ice hardness or ice quality and is usually quantified in terms of percent of completely frozen ice in the total ice product. Ice quality can vary significantly across different continuous ice makers, from less than 70 percent to more than 100 percent. DOE understands that the percentage of liquid water in the product of continuous ice makers is directly related to the measured energy consumption of these machines, since more refrigeration is required to freeze a greater percentage of the ice product.

To provide comparability and repeatability of results, in the April 2011 NOPR, DOE proposed to standardize the energy consumption and condenser water use measurements of continuous ice makers based on the ratio of enthalpy reduction of the water/ice product achieved in the machine (incoming water enthalpy less ice product enthalpy) to the enthalpy reduction that would be achieved if the ice were produced at 32 °F with no liquid water content. DOE proposed to base the adjustment on the ice quality of continuous type ice makers, as measured using the ''Procedure for Determining Ice Quality'' in section A.3 of normative annex A in ANSI/ASHRAE Standard 29–2009. DOE proposed that the calorimeter constant, defined and measured using ANSI/ASHRAE Standard 29–2009, be used to calculate an ''ice quality adjustment factor.'' This factor is a ratio of the refrigeration required to cool water from 70 °F to 32 °F and freeze all of the water compared to the refrigeration required to cool 70 °F water to the mixture of frozen ice and liquid water produced by the ice maker under test. The reported (adjusted) energy consumption would be equal to the ice quality adjustment factor multiplied by the energy consumption per 100 pounds of ice measured using ANSI/ASHRAE Standard 29–2009. The condenser water use would be adjusted in the same way. 76 FR at 18432–33 (April 4, 2011). DOE did not propose similar adjustment for the harvest rate.

Interested parties, including Manitowoc, Howe Corporation (Howe), and NEEA, generally supported this approach. (Manitowoc, No. 0005 at p. 41; Howe, No. 0017 at pp. 2–3; NEEA, No. 0013 at p. 2) However, Scotsman commented that normalization of energy and water consumption with respect to ice hardness could result in selection of higher energy consumption products by the consumer because when a consumer fills a glass or cooler with ice, they do so based on the volume of space the ice occupies, not the cooling power it provides. Scotsman added that, in rating

ice machines based on the total weight of the product of ice and water rather than just the ice content, the consumer gets a more accurate measurement of the amount of energy consumed to produce the nugget of ice that is in the cup or cooler, while ''normalizing'' to 32 °F ice with no water content gives a more accurate measure of the energy used to produce a certain amount of cooling power contained in the ice, but is not representative of how the ice is typically used. (Scotsman, No. 0010 at p. 1) Scotsman also asked if DOE intended to require ice hardness reporting. (Scotsman, No. 0010 at p. 1)

DOE maintains that, because energy and condenser water consumption are directly related to ice hardness, measurement and normalization with respect to ice hardness is necessary to compare equipment from different manufacturers accurately. In response to Scotsman's concern, DOE notes that this test method will not affect the availability of automatic commercial ice makers that produce lower quality ice; it will simply provide a method by which automatic commercial ice maker energy consumption and condenser water use results can be compared to a baseline ice quality. DOE acknowledges that, if consumers value total pounds of ice rather than the cooling that can be provided by the ice, the unadjusted energy and water consumption data may provide a better indication of the energy use per quantity valued by the customer. However, DOE believes that scaling energy and water consumption with respect to ice quality will result in more comparable values for determining compliance with DOE's energy conservation standards. The harvest rate of these ice makers will not be adjusted with respect to ice hardness. In addition, DOE is not considering changes to the certification requirements in this test procedure rulemaking. Thus, in this final rule, DOE is adopting the provisions proposed in the April 2011 NOPR to scale the energy and water consumption measured in ANSI/ASHRAE Standard 29–2009 based on a ratio of the refrigeration required to cool water from 70 °F to 32 °F and freeze all of the water compared to the refrigeration required to cool 70 °F water to the mixture of frozen ice and liquid water produced by the ice maker under test.

c. Ice Hardness Versus Ice Quality

As discussed above, DOE in the April 2011 NOPR proposed that the calorimeter constant, determined using ANSI/ASHRAE Standard 29–2009, be used to determine an ''ice quality adjustment factor.'' 76 FR at 18433 (April 4, 2011). Scotsman, Manitowoc, and Hoshizaki all commented that the term ''ice quality'' should instead be referred to as ''ice hardness,'' as defined in AHRI Standard 810–2007. (Scotsman, No. 0005 at p. 38; Manitowoc, No. 0005 at p. 40; Hoshizaki, No. 0005 at pp. 44–45) Howe countered that ''ice hardness,'' as defined in the AHRI standard, should not be used to replace the proposed ''ice quality'' used in the ASHRAE standard because the term ''ice hardness'' is confusing and is a misstatement. (Howe, No. 0017 at p. 8)

In response to comments from interested parties, DOE is using the term ''ice hardness'' in place of the term ''ice quality'' throughout this rule, since it is defined in AHRI Standard 810–2007 and seems to be the preferred term within the industry. Specifically, DOE is defining the ''ice hardness adjustment factor,'' as opposed to the previously defined ''ice quality adjustment factor,'' which will be calculated in order to scale energy consumption and condenser water use. DOE acknowledges Howe's comment that this may cause confusion, but contends that the terms ''ice hardness'' and ''ice quality'' are used interchangeably in the industry, and understands the two terms to have the same meaning.

d. Sub-Cooled Ice

Just as ice makers that produce less than 100 percent hardness ice will use less energy than ice makers that produce 100 percent 32 °F ice, ice makers that produce sub-cooled ice, or higher than 100 percent hardness ice, require more energy to produce a given mass of ice product. At the April 2011 NOPR public meeting and in subsequent written comments, Manitowoc, Howe, and NEEA all commented that the adjustment of energy and water consumption with respect to ice hardness should be allowed for sub-cooled ice as well as low hardness ice. (Manitowoc, No. 0005 at p. 42; Howe, No. 0005 at pp. 45–46; NEEA, No. 0013 at p. 2)

DOE agrees with interested parties that the energy content of sub-cooled ice should also be adjusted with respect to 32 °F ice of 100 percent hardness. However, DOE notes that the measurement of ice hardness is not limited to low hardness ice and that quantification of the ice hardness for sub-cooled ice is possible using the adopted procedure for ice hardness normalization. Rather, the adopted test procedure already accounts for the additional cooling associated with production of sub-cooled ice. DOE clarifies that ice hardness testing of ice makers that produce sub-cooled ice can be conducted using the ice hardness test procedure adopted in today's final rule and that the energy use and condenser water use measurements for ice makers that produce sub-cooled ice can and should be adjusted using the ice hardness adjustment factor.

e. Ice Hardness Testing of Batch Type Ice Makers

AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 both specify that ice hardness testing is only to be performed for continuous type ice makers. In the April 2011 NOPR, DOE also proposed that measurement and scaling of energy and water consumption values based on ice hardness only be required for continuous type ice makers. 76 FR at 18433 (April 4, 2011).

In written comments submitted in response to the April 2011 NOPR, Follett recommended that the ice quality adjustment be applied to batch type ice makers as well as continuous type. (Follett, No. 0008 at p. 1)

DOE agrees with Follett that there would be value in requiring batch machines to perform the ice hardness measurement and scale their energy consumption accordingly. Testing and normalizing energy and water consumption values for ice hardness would account for the additional energy consumption of batch type commercial ice makers that produce sub-cooled ice and would allow for the most consistent results across all ice makers. In addition, some batch type automatic commercial ice makers may produce cube type ice with some liquid water content. DOE believes that this would account for the additional energy consumption of batch type commercial ice makers that produce sub-cooled ice and would allow for the most consistent results across all ice makers. However, DOE does not have any data or information regarding the existence of batch type ice makers that vary from 100 percent hardness or the extent to which their hardness departs from 100 percent. DOE believes that, for most batch type ice makers, the ice hardness will be nearly 100 percent and any departure from 100 percent will be within the statistical accuracy of the ice hardness measurement. Lacking sound information, DOE is unable to justify the additional burden associated with requiring ice hardness measurement and scaling of energy and water consumption for batch type ice makers at this time. Thus, in today's final rule DOE specifies that only continuous type ice makers are required to measure ice hardness and adjust the energy

consumption and condenser water use based on the ice hardness measurement.

f. Variability of the Ice Hardness Measurement

DOE is aware of concerns regarding the accuracy and repeatability of the ice hardness test. These concerns were voiced during the U.S. Environmental Protection Agency (EPA) ENERGY STAR® discussions with interested parties regarding revisions to the ENERGY STAR specification for automatic commercial ice makers.[3] In written comments received during the comment period that followed the publication of the April 2011 NOPR, Scotsman recommended the tolerance for the ice hardness factor be ± 5 rather than ± 5 percent, as test data Scotsman has indicates that ± 5 percent is too tight when accounting for water mineral content, which can have a substantial impact on ice hardness. (Scotsman, No. 0010 at pp. 2–3)

As part of this rulemaking and the ongoing energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0037), DOE conducted testing of ice makers, including running the ice hardness tests. In conducting this testing, DOE wished to better understand the source of any variability in ANSI/ASHRAE Standard 29–2009 normative annex A. Specifically, DOE wished to discern the variability, if any, in the measurement of ice hardness that could be attributed specifically to inaccuracy in the test method, rather than inherent variability in the hardness of ice produced by a given ice maker. DOE determined that the fundamental test procedure established in ANSI/ASHRAE Standard 29–2009 is sound. However, DOE believes that several areas of the test procedure are unclear and could be misinterpreted. This includes confusing nomenclature and references in normative annex A, as well as specification of the specific temperatures, weights, and tolerances to be used in the test procedure.

DOE believes ANSI/ASHRAE Standard 29–2009 normative annex A specifies two procedures:

1. Section A2, ''Procedure,'' which specifies the calibration of the calorimeter device and the calculation of the calorimeter constant for the device; and

2. Section A3, ''Procedure for Determining Quality of Harvested Ice,'' which is used to determine the ice hardness of a given ice maker's ice product, defined as the ''ice hardness factor'' in AHRI Standard 810–2007 with Addendum 1.

DOE also believes there is confusion in determining the ice hardness factor of a given ice sample using section A3. AHRI Standard 810–2007 with Addendum 1 specifies that the ice hardness factor is the latent heat capacity of ice harvested in British thermal units per pound (Btu/lb), as defined in ANSI/ASHRAE Standard 29, Table A1, line 15, divided by 144 Btu/lb, multiplied by 100, presented as a percent. DOE believes that this value should also be multiplied by the calorimeter constant, line 18 of Table A1, as determined in section A2 at the beginning of that day's tests. This is equivalent to line 19 in ANSI/ASHRAE Standard 29–2009 Table A1, although it is not clear that the calibration constant used in line 18 is to be determined with seasoned block ice during the calibration procedure. To clarify this procedure, DOE will require that the ice hardness factor, as defined in AHRI Standard 810–2007 with Addendum 1, be calculated, except that it shall reference the corrected net cooling effect per pound of ice, line 19 of ANSI/ASHRAE Standard 29–2009 Table A1, and the calorimeter constant used in line 18 shall be that determined in section A2 using seasoned, block ice.

The ice hardness factor will be used to determine an adjustment factor based on the energy required to cool ice from 70 °F to 32 °F and produce a given amount of ice, as shown in the following:

$$\text{Ice Hardness Adjustment Factor} = \left[\frac{144\,\text{Btu}/\text{lb} + 38\,\text{Btu}/\text{lb}}{144\,\text{Btu}/\text{lb} \times \left(\text{Ice Hardness Factor}/100\right) + 38\,\text{Btu}/\text{lb}}\right]$$

The measured energy consumption per 100 pounds of ice and the measured condenser water consumption per 100 pounds of ice, as determined using ANSI/ASHRAE Standard 29–2009, will be multiplied by the ice hardness adjustment factor to yield the adjusted energy and condenser water consumption values, respectively. These values will be reported to DOE to show compliance with the energy conservation standard.

DOE explored the variation in both the calibration procedure and the procedure for determining an ice maker's ice hardness factor in laboratory testing. DOE hypothesized the following variables, which could contribute to variability in the test procedure:

- How to ensure that ice is ''seasoned''
- Thermal conductivity and specific heat of bucket
- Frequency and timing of calibration
- Vigorousness of ice stirring
- Location of temperature sensor in the ice bucket
- Variation in ambient conditions
- Difference between water temperature and ambient air temperature
- Time allowed between production of ice and initiation of ice hardness test

DOE conducted testing to determine the significance of these variables on the calorimeter constant result. DOE believes standardization and tolerances are important because otherwise there is no indicator of how close a measurement must be to the specified value in order to comply with the test procedure.

In section A2 of ANSI/ASHRAE Standard 29–2009, which specifies the calibration procedure for the calorimeter, DOE found that the type of ''seasoned'' ice used significantly affected the calibration of the device, but that variation of all other factors examined did not have a significant effect provided they were maintained within a reasonable range. DOE believes ''seasoned'' ice is ice that is 32 °F throughout with as little entrained water as possible. A single block of seasoned ice is used to minimize the amount of water on the surface of the ice due to the low surface area to volume ratio. If multiple, smaller cubes are used, and seasoned in the same manner, it is much more difficult to ensure that the surface liquid is removed so that a calorimeter

[3] Hoffman, M. *Personal Communication.* Consortium for and Energy Efficiency, Boston, MA. Letter to Christopher Kent, U.S. Environmental Protection Agency, regarding written comments submitted in response to the ENERGY STAR Commercial Ice Machines Version 2 Draft 1 Specification, June 11, 2011. *http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/commercial_ice_machines/ACIM_Draft_1_V_2.0_Comments_-_CEE.pdf.*

constant of less than 1.02 can be obtained.

DOE believes the calorimeter constant should be viewed as a calibration constant that is representative of the specific heat of the calorimeter device. This calorimeter constant shall not be greater than 1.02 when determined with seasoned block ice. This limit establishes that the calorimetry procedure is being performed correctly and all equipment is accurately calibrated.

ANSI/ASHRAE Standard 29–2009 normative annex A specifies the temperature difference between the air and water, the weight of water, and the weight of ice, but does not specify acceptable tolerances for any of these parameters. For example, ANSI/ASHRAE Standard 29–2009 normative annex A does not specify an initial water temperature or ambient air temperature. Instead, the initial water temperature is specified as 20 °F above room temperature. Also, this temperature differential does not have an associated tolerance. Similarly, the weights to determine the calorimeter constant in section A2, 30 pounds of water and 6 pounds of ice, do not have specified tolerances.

DOE found that changes in the ambient temperature, the temperature difference between the air and water, the weight of ice, and the weight of water did not affect the calorimeter constant significantly. However, DOE still must specify tolerances in order to ensure compliance with the test procedure. As such, DOE assumes the tolerances specified in section 6 of ANSI/ASHRAE Standard 29–2009, ''Test Methods,'' also apply to the normative annex, namely water and air temperature shall be within 1 °F of the specified value and the measured weights of ice and water shall be within ± 2 percent of the quantity measured. DOE believes that the ice hardness measurement should be conducted at the same ambient temperature as the other testing, namely 70 °F. This will increase the accuracy and repeatability of the measurement. DOE believes that a temperature differential of 20 °F is appropriate, as it minimizes heat flow into and out of the water. DOE does not believe maintaining 70 °F ± 1 °F ambient air temperature and obtaining 90 °F ± 1 °F initial water temperature will be burdensome for manufacturers as it is commensurate with the ambient requirements already called for in the energy consumption and condenser water consumption test, and 90 °F water is easily attainable from a standard water heater. As such, DOE is clarifying in today's final rule that normative annex A of ANSI/ASHRAE Standard 29–2009 shall be performed at 70 °F ± 1 °F ambient air temperature with an initial water temperature of 90 °F ± 1 °F and weights shall be accurate to within ±2 percent of the quantity measured.

With these changes and assumptions, DOE was able to produce a repeatable calorimeter constant measurement of less than 1.02 when testing using seasoned ice. While there may be variations in ice hardness inherent to the machine, for given hardness of ice, DOE was able to produce ice hardness results that agree within 1.3 percent.

In response to Scotsman's comment regarding tolerances of the ice hardness factor, as defined in AHRI Standard 810–2007 with Addendum 1, DOE believes that ±5 percent variability for a given basic model should be sufficient given the data DOE has collected on ice hardness measurements. DOE does not have data to validate the need for or support the development of a different tolerance for the ice hardness of continuous type ice makers. The variance on the ice hardness factor is only relevant to the extent that it impacts the calculation of energy consumption or condenser water use. With respect to the reported energy and condenser water use, manufacturers must meet DOE's certification, compliance, and enforcement (CCE) regulations for automatic commercial ice makers, which established the relevant sampling plans and tolerances for the certified ratings of energy and water consumption values. 76 FR 12422 (March 7, 2011).

In summary, DOE believes there is sufficient accuracy and precision in the test procedure for determining ice hardness prescribed in ANSI/ASHRAE Standard 29–2009 normative annex A, with the exception that the test shall be conducted at an ambient air temperature of 70 °F ± 1 °F, with an initial water temperature of 90 °F ± 1 °F, and weights shall be accurate to within ± 2 percent of the quantity measured. DOE believes adding these specifications and tolerances will allow for greater repeatability and standardization without significant additional burden on manufacturers. All other potential sources of variability were found to not significantly affect the calculated ice hardness.

g. Perforated Containers for Continuous Type Ice Makers

As mentioned previously, continuous type ice makers produce ice that is not 100 percent frozen and contains some liquid water. In the current industry test procedures, a non-perforated container is used to capture the ice product so that all of the ice/water mixture is included in the harvest rate and the ice hardness measurement.

At the April 2011 NOPR public meeting, Howe commented that the container that is used for continuous ice should be a perforated container rather than a solid container to remove chilled water that is not usable ice from the test procedure process. (Howe, No. 0005 at p. 48) Howe noted that, beyond beverage dispensing, there is no useful application for the cooled liquid water content of low hardness ice. (Howe, No. 0005 at p. 56) Scotsman and Hoshizaki commented that when consumers use ice, they usually do so based on volume of both ice and water, so there is value in both the water and the ice portion. (Scotsman, No. 0005 at p. 39; Hoshizaki, No. 0005 at p. 45) Manitowoc provided the example of low quality ice being useful in beverage dispensers and packing fish. (Manitowoc, No. 0005 at pp. 55–56)

In response to Howe's suggestion that perforated containers be used for continuous type ice makers, Scotsman commented that it may not be practical to use a perforated container to capture continuous ice because the liquid water is infused in the ice and it takes a long time for it to drain out, and the ice would melt over that period. (Scotsman, No. 0005 at pp. 50–51) Hoshizaki noted that with a perforated container the size of the perforations would need to be defined because very small bits of ice, called ''dust ice,'' may fall through the perforations, causing a loss of good quality ice. (Hoshizaki, No. 0005 at p. 51) Hoshizaki added that the calorimetry test already accounts for the differences between low hardness ice and high hardness ice. (Hoshizaki, No. 0005 at pp. 51–52) Manitowoc agreed with Hoshizaki with respect to the calorimetry test being sufficient to differentiate low hardness and high hardness ice. (Manitowoc, No. 0005 at p. 52) NEEA commented that a perforated basket should not be required for continuous type ice makers because only a fraction of the product that is not fully hardened (chilled water) will escape the matrix of the hardened product in a reasonable period. In addition, NEEA commented that this would introduce an unfortunate degree of test complexity and variability in the results and that any improvement in the product accounting should be worth this additional complexity and variability. (NEEA, No. 0013 at p. 2)

DOE believes that, as Manitowoc, Scotsman, and Hoshizaki stated, there is clear value and customer utility in the liquid water content of low hardness ice and that this should be measured as part

of the ice product when determining the harvest rate. DOE also believes that the proposed procedure for adjusting energy and water consumption measurements with respect to ice hardness, defined in section III.A.3.b, is sufficient to describe the differences between ice with different amounts of water content. Further, if a perforated container were used for testing continuous type ice makers, this would not be representative of the ''ice product'' consumers receive and expect. DOE is not requiring testing of continuous type ice makers with a perforated container in today's final rule and instead is maintaining the industry-accepted method of testing continuous type ice makers with a non-perforated container to measure harvest rate and test for ice hardness.

4. Clarify the Test Method and Reporting Requirements for Remote Condensing Automatic Commercial Ice Makers

EPCA establishes energy conservation standards for two types of remote condensing automatic commercial ice makers: (1) Remote condensing (but not remote compressor) and (2) remote condensing and remote compressor. (42 U.S.C. 6313(d)(1)) Remote condensing (but not remote compressor) ice makers are sold and operated with a dedicated remote condenser that is in a separate section from the ice-making mechanism and compressor. Remote condensing and remote compressor automatic commercial ice makers may be operated with a dedicated remote condensing unit or connected to a remote compressor rack. Units designed for connection to a compressor rack may also be sold with dedicated condensing units, but some rack-connection units are sold only for rack connection, without a dedicated refrigeration system. The energy use of such equipment is often reported without including the compressor or condenser energy use, since manufacturers generally do not have a compressor rack at their disposal for testing purposes. In the April 2011 NOPR, DOE proposed that remote condensing ice makers that are designed to be used with a remote condensing rack would be tested with a sufficiently sized dedicated remote condensing unit. This approach was proposed to ensure that ratings for such equipment represent all of the energy use incurred by such machines for making ice, including the compressor and condenser energy use. 76 FR at 18433–34 (April 4, 2011).

Howe, Manitowoc, NEEA, Follett, CA IOUs, and the Natural Resources Defense Council (NRDC) all agreed with DOE's proposal to test remote condensing ice makers designed to be connected to a remote condensing rack using dedicated remote condensing units and reporting the energy consumption of the ice-making mechanism, condenser, and compressor. (Howe, No. 0005 at p. 63; Manitowoc, No. 0005 at p. 64; NEEA, No. 0005 at p. 64; Follett, No. 0008 at p. 1; CA IOUs, No. 0011 at p. 2; NRDC, No. 0012 at p. 1) Earthjustice and NRDC both recommended that DOE provide clear guidance on how to select a remote condensing unit to pair with a given ice maker for such a test. (Earthjustice, No. 0005 at p. 75; NRDC, No. 0012 at p. 1) However, the CA IOUs and NEEA commented that, given that ice production performance is closely tied to the refrigerant system specifications, as manifested in the ice-making head, manufacturers will likely select compressor/condenser components that are properly matched to the requirements of the balance of the system, since any significant deviation from this would likely change ice production performance and adversely affect the energy performance rating of the system. (CA IOUs, No. 0011 at p. 2; NEEA, No. 0013 at pp. 2–3) NEEA suggested that one possible guideline for selecting the balance-of-system components might simply be to require that the ice-making head be tested with the compressor/condenser components that would be shipped with it if sold with a dedicated condenser; however, NEEA also commented that this is a minor issue. (NEEA, No. 0013 at pp. 2–3)

Hoshizaki stated that, generally, a rack unit ice machine is similar in construction to other ice machines that are designed to be paired with a remote condensing unit, but that is not necessarily the case every time. (Hoshizaki, No. 0005 at p. 67) Hoshizaki continued that it does not have a condensing unit designed for use with its largest rack unit machine and it would have to develop such a condensing unit to test the ice maker as proposed. (Hoshizaki, No. 0005 at pp. 67–68) Scotsman stated that it also manufactures products that are meant to be connected to rack systems for which it does not offer a dedicated condensing unit, and that it would be problematic for Scotsman to develop a companion condensing unit for it. Scotsman added that such a rating would be arbitrary because it would not represent what was actually sold. (Scotsman, No. 0005 at pp. 72–73) Scotsman recommended that only the power of the ice-making mechanism should be reported for units that do not have matched dedicated condensing units, because reporting power for the condensing units for those machines would require manufacturers to either design and build or purchase a condenser that would never be offered for sale. (Scotsman, No. 0010 at p. 2) Manitowoc agreed that, in most situations, manufacturers will use the same basic evaporator section and controls for both a parallel rack and remote condensing/compressor, so the inclusion of the remote system with a dedicated condensing unit will effectively cover the testing and regulation of the majority of automatic commercial ice machines, even if they are matched to a parallel rack system. Manitowoc recommended that the test method only include matched remote condensing systems with a designated condensing unit, and that any evaporator section that is sold only for application with a remote parallel rack is outside of the scope of the regulations. (Manitowoc, No. 0009 at p. 2) Howe stated that many of the units it manufactures are designed solely for use with remote, field-built refrigeration systems, and it does not have condensing units available to test these units. Howe contended that this would leave them and other small manufacturers with no choice but to discontinue models, thus decreasing sales and severely harming their financial viability. (Howe, No. 0017 at pp. 4–5)

DOE believes that testing all remote condensing and remote compressor automatic commercial ice makers that are designed to be connected to a remote compressor rack with a sufficiently sized dedicated remote condensing unit will adequately represent the energy consumption of this equipment without introducing undue burden. DOE notes that typically a remote condensing and compressor ice maker is designed to be paired with only one type of dedicated condensing unit and agrees with interested parties that manufacturers will be encouraged to test the ice maker using this paring as it will ensure the ice maker operates most efficiently. Thus, DOE does not believe further specification as to the pairing of remote condensing and remote compressor ice-making mechanisms and dedicated remote condensing units is required. For remote condensing and remote compressor ice makers that can be sold either with a matched dedicated condensing unit or for connection to a remote compressor rack, this method provides a straightforward and consistent way to compare the performance of remote condensing and remote compressor ice makers. Even

though DOE believes that the dedicated condensing unit and ice maker will be a unique combination and further specificity in the test procedure is unnecessary, DOE notes that the ratings for each basic model must be based on the least efficient individual model combination.

For remote condensing and remote compressor ice makers that are never sold with a dedicated condensing unit, DOE considered Manitowoc's comment that ice makers designed only for connection to remote compressor racks are out of the scope of the regulations. DOE concurs with this comment, finding that these units are inconsistent with the definition of ''automatic commercial ice maker'' in EPCA. EPCA defines an automatic commercial ice maker as ''a factory-made assembly (not necessarily shipped in one package) that—(1) consists of a condensing unit and ice-making section operating as an integrated unit, with means for making and harvesting ice.'' (42 U.S.C. 6311(19)) Because remote condensing automatic commercial ice makers that are solely designed to be connected to a remote rack are not sold or manufactured with a condensing unit, they do not meet the definition of an automatic commercial ice maker under the statute. Hence, the test procedure final rule does not address such products. DOE notes that remote condensing automatic commercial ice makers designed to be connected to a remote rack constitute a small market share and are typically more efficient than similar, smaller capacity ice makers. DOE also notes that there is interest by manufacturers and the ENERGY STAR program for DOE to provide a test method for these types of systems. Consequently, DOE will address testing of remote condensing automatic commercial ice makers designed to be connected to a remote rack in its ENERGY STAR test procedure development process, which is separate from this rulemaking.

In summary, DOE clarifies in this final rule that remote condensing automatic commercial ice makers that are sold exclusively to be connected to remote compressor racks do not meet the definition of an automatic commercial ice maker set forth under 42 U.S.C. 6311(19) and, as such, are not subject to DOE regulations.

DOE further notes that ice makers that could be connected to remote compressor racks but are also sold with dedicated condensing units are covered by DOE regulations in their configuration when sold with dedicated condensing units.

5. Discontinue Use of a Clarified Energy Rate Calculation

The current DOE test procedure references ARI Standard 810–2003, with an amended calculation for determining the energy consumption rate for the purposes of compliance with DOE's energy conservation standards. ARI Standard 810–2003 references ANSI/ASHRAE Standard 29–1988 (RA 2005) as the method of test for this equipment, including the equations for calculating the energy consumption rate per 100 pounds of ice produced. In the 2006 en masse proposed rule, DOE found the language in ANSI/ASHRAE Standard 29–1988 (RA 2005) unclear and proposed that the energy consumption rate be normalized to 100 pounds of ice instead and be determined as shown in the following equation. 71 FR at 71350 (Dec. 8, 2006).

$$\text{Energy Consumption Rate (per 100 lbs ice)} = \frac{\text{Energy Consumed During Testing (kWh)}}{\text{Mass of Ice Collected During Testing (lbs)}} \times 100\%$$

At the September 2006 public meeting for the 2006 en masse proposed rule, ARI supported DOE's proposal to adopt ARI Standard 810–2003 as the test procedure for automatic commercial ice makers with the revised energy use rate equation. However, ARI further stated that the ARI and ASHRAE standards have been used without the clarification. (Docket No. EE–RM/TP–05–500, ARI, Public Meeting Transcript, No. 18.8 at pp. 45–46)

The equation contained in ANSI/ASHRAE Standard 29–1988 (RA 2005), as adopted, directs that the energy consumption shall be calculated as the weight of ice produced during three specified time periods divided by the power consumed during those same three time periods. The specified time periods are defined as three complete cycles for batch type ice makers and three 14.4-minute periods for continuous type ice makers. The verbatim equation from ANSI/ASHRAE Standard 29–1988 (RA 2005) is as follows:

$$\text{kWh}/_{\text{100 lb ice}} = 8.^{4a}/_{8.2a} \times 100$$

In the above equation, ''kWh/100 lb ice'' refers to the desired energy consumption rate normalized per 100 pounds of ice produced; 8.2a refers to the data to be recorded for the capacity test, specifically weight in pounds of ice produced for three prescribed periods of collection; and 8.4a refers to the section of the standard that describes the data to be recorded for the calculation of energy consumption, specifically the energy input in kilowatt-hours for the same periods prescribed for measurement of capacity. This equation did not change in the update of ANSI/ASHRAE Standard 29–1988 (RA 2005) to the most recent ANSI/ASHRAE Standard 29–2009.

In the April 2011 NOPR, DOE concluded that the procedure specified in ANSI/ASHRAE Standard 29–2009 is clear and unambiguous. As a result, DOE proposed to remove the clarification for the calculation of energy consumption rate in this rulemaking. 76 FR at 18434–35 (April 4, 2011). AHRI, NEEA, Manitowoc, Follett, Hoshizaki, and Scotsman all supported DOE's proposal to remove the calculation for energy consumption. (AHRI, No. 0015 at p. 3; NEEA, No. 0013 at p. 3; Manitowoc, No. 0009 at p. 3; Follett, No. 0008 at p. 1; Hoshizaki, No. 0005 at p. 93; Scotsman, No. 0005 at p. 93)

DOE believes the ANSI/ASHRAE Standard 29–2009 test procedure clearly states that the mass of ice collected will be recorded for each of the three complete periods specified. ANSI/ASHRAE Standard 29–2009 also states that the power consumption will be recorded for the same three periods. DOE believes that this statement is clear and does not provide opportunity for misinterpretation. Additionally, DOE acknowledges that this method may show more consistency in the average energy use rate calculation and, further, is the method typically used in industry

today. In this final rule, DOE is removing the language that clarifies the calculation of energy consumption rate.

6. Test Procedure Compliance Date

EPCA, as amended, requires that any amended test procedures for automatic commercial ice makers shall comply with section 6293(e) of the same title (42 U.S.C. 6314(a)(7)(C)), which in turn prescribes that if any rulemaking amends a test procedure, DOE must determine ''to what extent, if any, the proposed test procedure would alter the measured energy efficiency * * * of any covered product as determined under the existing test procedure.'' (42 U.S.C. 6293(e)(1)) Further, if DOE determines that the amended test procedure would alter the measured efficiency of a covered product, DOE must amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2))

In accordance with 42 U.S.C. 6293(e), DOE evaluated the amended test procedure, as adopted in today's final rule, to determine if it will affect the measured energy efficiency of a covered piece of equipment determined under the existing test procedure. DOE believes that the amendments set forth in today's final rule will not change the measured energy consumption of any covered piece of equipment. The reasoning for this determination is set forth in the following section.

When the revised ACIM test procedure final rule goes into effect, 30 days from today's publication in the **Federal Register**, the energy conservation standards set in EPACT 2005 for automatic commercial ice makers that produce cube type ice of capacities between 50 and 2,500 pounds of ice per 24 hours will be in effect. DOE believes that the only test procedure amendments adopted in this final rule applicable to automatic commercial ice makers covered under EPACT 2005 standards are those that update the references to industry test procedures to their most current versions and discontinue the use of a clarified energy use rate equation. DOE believes that these amendments would not significantly affect the measured energy or water use of equipment for which standards are currently in place.

The amendment that updates the references to industry test procedures to their most current versions is not anticipated to affect the measured energy consumption or condenser water use of covered equipment determined by DOE's existing test procedure. The updated industry test procedures, AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009, primarily expand the test procedure to continuous type ice makers and ice makers with capacities up to 4,000 pounds of ice per 24 hours, which does not affect the test procedure for ice makers that make cube type ice with capacities between 50 and 2,500 pounds of ice per 24 hours. AHRI Standard 810–2007 with Addendum 1 revised the definition of ''potable water use rate'' and added new definitions of ''purge or dump water'' and ''harvest water'' that more accurately describe the water consumption of automatic commercial ice makers. This change only affects measurement of the potable water use of automatic commercial ice makers and, as such, does not impact the DOE test procedure for automatic commercial ice makers. The amendment that discontinues the use of the clarified energy use rate equation is primarily editorial and does not fundamentally affect the way automatic commercial ice makers are tested. These amendments are described in more detail in sections III.A.1 and III.A.5. DOE notes that if manufacturers test a given basic model using the amended test procedure and find it results in a more consumptive rating than its certified value, they are required to recertify the given basic model with the Department.

In this final rule, DOE also adopts other test procedure amendments that are only applicable to types of automatic commercial ice makers for which energy conservation standards do not currently exist. In the concurrent ACIM energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0037), DOE is considering establishing energy conservation standards for batch type and continuous type ice makers with capacities up to 4,000 pounds of ice per 24 hours. This includes new energy conservation standards for batch type ice makers that produce cube type ice with capacities between 2,500 and 4,000 pounds of ice per 24 hours, batch type ice makers that produce other than cube type ice with capacities between 50 and 4,000 pounds of ice per 24 hours, and continuous type ice makers with capacities between 50 and 4,000 pounds of ice per 24 hours. Because there currently are no standards for the aforementioned types of ice makers, 42 U.S.C. 6293(e) does not apply to test procedure amendments that affect only those equipment types.

B. Notice of Proposed Rulemaking Comment Summary and DOE Responses

At the April 2011 NOPR public meeting and in the ensuing comment period, DOE received comments from interested parties that were in response to issues discussed in the ACIM test procedure proposed rulemaking, but which are not among the amendments discussed above and included in this final rule. The additional matters on which DOE received comments are as follows:

1. Test Method for Modulating Capacity Automatic Commercial Ice Makers
2. Treatment of Tube Type Ice Machines
3. Quantification of Auxiliary Energy Use
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This section discusses these comments and DOE's responses to them.

1. Test Method for Modulating Capacity Automatic Commercial Ice Makers

An ice maker could theoretically be designed for multiple capacity levels, either using a single compressor capable of multiple or variable capacities, or using multiple compressors. This may be advantageous since ice makers operate at full capacity for only a small portion of the time, if at all. Such a system could potentially produce ice more efficiently when operating at a low capacity level because there would be more heat exchanger surface area available relative to the mass flow of refrigerant, which would reduce temperature differences in the heat exchangers and result in operation of the compressor with lower pressure lift. DOE is not aware of any evidence that such a system has been sold or tested anywhere in the world. However, the basic concept is illustrated by the current use of different capacity models using the same heat exchangers with different capacity compressors. For such product pairs, the lower capacity machine is generally more efficient.

In the April 2011 NOPR, DOE proposed an optional test procedure to measure energy and water use of variable or multiple capacity systems. The proposed procedure involved measuring energy use in kilowatt-hours per 100 pounds of ice and water use in gallons per 100 pounds of ice of at least two production rates and calculating weighted average energy use and water use values. DOE proposed that, for modulating capacity systems, testing would be done at the maximum and minimum capacity settings. These

values would then be averaged to determine the energy consumption and condenser water consumption of the ice maker. DOE proposed equal weighting of the measurements at different capacities (as represented by the average) and requested information and data that might be used to develop a weighting scheme more representative of field use. 76 FR at 18434 (April 4, 2011).

At the April 2011 NOPR public meeting and in subsequent written comments, interested parties all agreed that DOE was premature in establishing test procedures for a technology that was not on the market, or even in development, and that DOE should wait until there is more information about how these machines would function before establishing a test procedure. (AHRI, No. 0005 at p. 85; Scotsman, No. 0010 at p. 2; NRDC, No. 0012 at p. 1; NEEA, No. 0013 at p. 3; Howe, No. 0017 at p. 5) NRDC and NEEA offered that manufacturers are free in the future to seek waivers from established test procedures if and when they need to do so to certify such a product complies with DOE's energy conservation standards. (NRDC, No. 0012 at p. 1; NEEA, No. 0013 at p. 3) NEEA also offered to consider acquiring some ice maker end-use metering data to determine ice maker duty cycles to shed some light on how to weight tested energy use values in the future. (NEEA, No. 0013 at p. 3)

DOE acknowledges the comments of interested parties and concedes that incorporating a method for accommodating modulating capacity ice makers may be premature, since modulating capacity ice makers currently do not exist and there is limited information about how such equipment would function. DOE will not incorporate a test method for testing automatic commercial ice makers at multiple capacity ranges at this time. If a manufacturer develops such an ice maker, DOE encourages that manufacturer to follow the test procedure waiver process in 10 CFR 431.401.

2. Treatment of Tube Type Ice Machines

In the April 2011 NOPR, DOE proposed to clarify in the DOE test procedure that tube and other batch technologies can be tested by the current industry test procedures using the batch type test method. 76 FR at 18436 (April 4, 2011). Scotsman, Manitowoc, and Follett supported DOE's approach of treating all non-cube batch type ice makers consistently using the test procedure for batch type ice makers. (Scotsman, No. 0005 at p. 97; Manitowoc, No. 0005 at p. 97; Follett, No. 0008 at p. 1) The CA IOUs asked DOE to clarify in the DOE test procedure that tube, cracked, and other batch type technologies will be included by the proposed DOE definitions and test method. (CA IOUs, No. 0011 at p. 2)

DOE agrees with the comments from Scotsman, Manitowoc, and Follett regarding categorization of tube type ice machines, and finds that tube type machines can be tested under the currently available test procedures. Therefore, DOE is clarifying in the DOE test procedure that tube and other batch technologies can be tested by the current industry test procedures using the batch type test method. DOE will treat all batch type machines, as defined previously in the proposed rule, the same. This will include tube type, cube type, and other batch type automatic commercial ice makers.

3. Quantification of Auxiliary Energy Use

In the April 2011 NOPR, DOE referred to energy consumed when an ice maker is not producing ice as auxiliary energy consumption. 76 FR at 18436 (April 4, 2011). DOE also noted that the magnitude of this energy use is less than one percent of the total daily ice maker's energy consumption, assuming typical auxiliary power levels and ice maker duty cycle (*i.e.* portion of time in a day that the ice maker produces ice). Thus, DOE did not propose incorporating the measurement of auxiliary energy use in the test procedure since DOE could not find economic justification in the potential energy savings generated when considering the additional test procedure burden associated with auxiliary power testing. 76 FR at 18436 (April 4, 2011).

Follett, Scotsman, and the CA IOUs supported DOE's determination that an additional test procedure to quantify auxiliary energy consumption is not justified. (Scotsman, No. 0010 at p. 3; Follett, No. 0008 at p. 2; CA IOUs, No. 0011 at p. 2) Manitowoc agreed with DOE's finding that auxiliary energy use represents an insignificant contribution to the total energy consumption of a commercial ice machine.[4] Manitowoc further stated that any attempt to incorporate these minor standby losses would require definition of the percentage of time the ice machine is operating in a typical installation, would require laboratories to measure power consumption at levels below 1 percent of operating input power, and in the end would at most change the energy efficiency value for the machine by an amount well below the tolerances allowed in the reference test standards. (Manitowoc, No. 0009 at p. 3) Manitowoc added that there actually is no auxiliary energy consumption in an automatic commercial ice maker, since ice makers are all electrically powered and all of the electricity use is measured while they operate during a test. (Manitowoc, No. 0005 at pp. 109–110)

The CA IOUs and NEEA stated that, based on the definition of standby (*i.e.,* connected to a power source and not performing any of its primary functions), DOE should call this mode ''standby mode'' instead of ''auxiliary mode.'' (CA IOUs, No. 0011 at p. 2; NEEA, No. 0013 at pp. 3–4)

AHRI agreed with DOE's conclusion that the auxiliary energy use during the non-ice-making period is very small and that its quantification is not justified. AHRI offered that ''standby mode'' energy consumption represents a very small portion of the energy usage and is negligible. AHRI also stated that EPCA does not give DOE the authority to regulate ''standby mode'' and ''off mode'' energy for commercial equipment because section 42 U.S.C. 6295 of EPCA, as amended by EISA 2007, specifically deals with consumer products (*i.e.,* residential equipment) and not commercial equipment. (AHRI, No. 0015 at p. 3)

NRDC and Earthjustice disagreed with AHRI and commented that the statutory direction regarding standby for consumer products requires that it be considered for implementation when test procedures for consumer products are revised, but that this does not preclude DOE from considering standby or other aspects of auxiliary energy use in commercial products. (NRDC, No. 0005 at p. 107; Earthjustice, No. 0014 at p. 1) Earthjustice also noted that, although Congress did not specifically mandate the development of standby and off mode energy consumption metrics for commercial equipment, 10 watts is consistent with the baseline levels of standby energy consumption that Congress considered significant enough to merit regulation in residential products. Earthjustice pointed to 73 FR 62052 (Oct. 17, 2008), where baseline standby power for microwave ovens was given as 4 watts, and 75 FR 64627 (Oct. 20, 2010), where baseline standby and off mode electricity consumption of furnaces was given as ranging from 2 to 10 watts. Earthjustice added that, even if measuring and regulating the between-cycle energy consumption of ice makers would at best reduce the

[4] At the Framework Document public meeting, Manitowoc mentioned that standby energy use due to sensors could represent an electrical load as high as 10 watts in some units. (Docket No. EERE–2010–BT–STD–0037, Manitowoc Ice, No. 0016 at p. 143)

total energy consumption of this equipment by no more than 1 percent, promulgating ice maker standards that fail to capture these energy savings, if technologically feasible and economically justified, would be inconsistent with EPCA's direction to maximize energy savings. (42 U.S.C. 6295(o)(2)(A)) Earthjustice also stated that including provisions in the test procedure to measure the energy consumption of ice makers in between ice-producing cycles is needed to comport with the EPCA requirement that test procedures accurately depict real-world energy consumption (42 U.S.C. 6314(a)(2)), as the consumers of this equipment are unlikely to unplug their ice makers when the ice storage bin is full. (Earthjustice, No. 0014 at p. 1)

NRDC and NEEA both recommended that DOE incorporate a measure of auxiliary energy use into the test procedure, as consumption levels as high as 10 watts certainly warrant measurement, and incorporate this measure into the efficiency standard if justified. (NRDC, No. 0012 at p. 2; NEEA, No. 0005 at p. 99) NEEA also stated that this energy consumption should be called ''standby energy consumption,'' and disagreed that the measurement of standby energy use represents anything more than a minor additional testing burden, as the equipment required to measure it precisely is inexpensive and the test, as spelled out in International Electrotechnical Commission (IEC) 62301, is simple to conduct. (NEEA, No. 0013 at pp. 3–4)

DOE agrees with commenters that auxiliary energy use could also be referred to as standby energy consumption. DOE has been unable, however, to collect sufficient information regarding standby mode energy use to support the promulgation of a standby mode test procedure within the scope of this rulemaking.

4. Measurement of Storage Bin Effectiveness

A common metric used to quantify ice meltage in the ice storage bin is storage bin effectiveness. Storage bin effectiveness is defined as a theoretical expression of the fraction of ice that under specific rating conditions would be expected to remain in the ice storage bin 24 hours after it is produced, stated as a percentage of total ice deposited in the bin. AHRI has a standard, AHRI 820–2000, that describes a test method for quantifying the effectiveness of ice storage bins. This method, or a similar method, is also used in the Canadian and Australian test procedures for automatic commercial ice makers to quantify ice storage bin effectiveness.

In the April 2011 NOPR, DOE stated that, while quantifying the additional energy use associated with ice storage losses could contribute to additional energy savings, doing so would result in an inconsistency between the standards for self-contained and remote condensing ice makers or ice-making heads because DOE would only be addressing the ice storage losses associated with the storage bins that are shipped with the ice making mechanism from the point of manufacturer (*i.e.,* self-contained ice makers). Consequently DOE noted that there could be an increased burden resulting from testing for storage bin effectiveness for manufacturers of self-contained units only. DOE proposed, for these reasons, to not include a quantification of meltage in the storage bin in this rulemaking. 76 FR at 18436 (April 4, 2011).

Howe, Manitowoc, Hoshizaki, and Scotsman commented that ice storage bins are typically not specified by the manufacturer, are separate devices, have different lifetimes, and can be paired with one automatic commercial ice machine in many different combinations based on a variety of end-user requirements. These manufacturers all contended that it would be difficult to include ice storage bins as a part of the test procedure for ice-making equipment, and testing all possible combinations would be excessively burdensome and costly for all manufacturers. (Howe, No. 0017 at p. 4; Manitowoc, No. 0009 at p. 3; Hoshizaki, No. 0005 at pp. 124–125; Scotsman, No. 0010 at p. 3) Howe further commented that ice storage bins are often sold separately from the automatic commercial ice makers, and many small manufacturers only produce ice storage bins, not ice machines. (Howe, No. 0017 at p. 4) In addition, Howe, Follett, and Manitowoc all commented that ice storage bin efficiencies are outside the scope of this proposed rule and suggested that if a test procedure for ice storage bin effectiveness is established, it should be separate from the ACIM test procedure. (Howe, No. 0017 at p. 4; Follett, No. 0008 at p. 1; Manitowoc, No. 0005 at p. 116) AHRI expressed its opinion that DOE lacks the authority to regulate the effectiveness of storage bins because EPACT 2005 only addresses the energy consumption of commercial ice makers and nothing else. (AHRI, No. 0015 at p. 2)

Earthjustice commented that there is precedent for DOE to adopt test procedures and standards for products that account for such indirect forms of energy consumption. (Earthjustice, No. 0014 at p. 2) Earthjustice further commented that the statute's definition of automatic commercial ice maker states that an automatic commercial ice maker may include a means for storing ice, dispensing ice, or storing and dispensing ice. Earthjustice added that while Congress did not establish standards applicable to the storage of ice, it did provide DOE with a requirement to amend standards for automatic commercial ice makers, and if storage is a part of the ice maker, clearly the Department has the authority. (Earthjustice, No. 0005 at p. 119) NRDC and the Appliance Standards Awareness Project (ASAP) commented that DOE should not preclude coverage of storage bins in the standards rulemaking by not covering them in the test procedure. (NRDC, No. 0005 at p. 119; ASAP, No. 0005 at p. 129) The CA IOUs, NEEA, and NRDC recommended that the Department include a measure of ice storage bin effectiveness in the test procedure, applicable to units shipped with an integral bin, since ineffective storage contributes to additional energy use, condenser water use, and potable water use for a given end-user demand for finished ice. (NRDC, No. 0012 at p. 2; NEEA, No. 0005 at p. 124; CA IOUs, No. 0011 at p. 3) NRDC and NEEA further stated that the concern over additional test burden is misguided given that an AHRI test method for quantifying the effectiveness of storage bins has long been available and Canadian standards already require manufacturers to conduct this test. (NRDC, No. 0012 at p. 2; NEEA, No. 0005 at p. 124) NEEA further stated that it sees no problem in measuring storage bin effectiveness only for self-contained equipment, as there are other test procedure inconsistencies between classes already and this one is appropriate to the equipment. In response to manufacturer comments that one ice-making head may be shipped with any one of a number of storage bins, NEEA offered that a separate efficiency metric for the storage bins could easily work in practice. (NEEA, No. 0013 at p. 4)

While DOE acknowledges stakeholders' concerns regarding storage bin effectiveness, DOE has determined that it will not pursue a measure for storage bin effectiveness at this time. Many ice makers (ice-making heads and remote compressing ice makers) can be paired with any number of storage bins, often produced by other manufacturers, and are typically paired in the field upon installation. In these cases, the effectiveness of such storage bins is

beyond the control of the manufacturer of the ice making head or remote compressing ice maker.

Furthermore, if DOE were to regulate self-contained ice makers only, it could disincentivize the manufacturing of such devices, effectively eliminating a feature (built-in ice storage bins). *See* 42 U.S.C. 6295(o)(4). In order to avoid this outcome, DOE is choosing not to regulate self-contained ice makers only. Therefore, DOE believes it would be more consistent to promulgate test procedures and subsequent standards for ice storage bins and the bins of self-contained ice makers at the same time. Due to market complexities inherent in the pairing of ice makers and storage bins, DOE is declining to include a quantification of meltage in the storage bin as part of this rulemaking.

5. Establishment of a Metric for Potable Water Used To Produce Ice

The current DOE energy conservation standard for automatic commercial ice makers established metrics of energy use per 100 pounds of ice for all equipment classes, and condenser water use per 100 pounds of ice produced for water-cooled models only. However, automatic commercial ice makers consume potable water to produce ice as well. AHRI Standard 810–2007 with Addendum 1 defines ''potable water use rate'' as the amount of potable water used in making ice, including ''dump or purge water'' and ''harvest water.'' AHRI Standard 810–2007 with Addendum 1 defines ''dump or purge water'' as the water from the ice-making process that was not frozen at the end of the freeze cycle and is discharged from a batch type automatic commercial ice maker and ''harvest water'' as the water that has been collected with the ice used to measure the machine's capacity.

Including potable water used to produce ice in the overall water metric could produce significant water savings and additional energy savings. The current EPA ENERGY STAR standard for automatic ice makers limits water use in air-cooled machines to less than 25 gallons per 100 pounds of ice for remote condensing automatic commercial ice makers and 35 gallons per 100 pounds of ice for self-contained equipment.[5] In addition, both the previously referenced ARI Standard 810–2003 and the updated AHRI Standard 810–2007 with Addendum 1 provide a test method to measure the amount of water used in making ice in units of gallons per 100 pounds of ice.

In the April 2011 NOPR, DOE stated that it had examined the statutory authority in EPCA for the establishment of test procedures and energy and water conservation standards for automatic commercial ice makers and determined that the Department does not have a direct mandate from Congress to regulate potable water use under 42 U.S.C. 6313. Therefore, in the April 2011 NOPR, DOE proposed not to regulate potable water used in making ice in this rulemaking. 76 FR at 18437 (April 4, 2011).

AHRI commented that potable water consumption information is already available in the AHRI online database, which is publicly available, and recommended against requiring potable water testing in the DOE test procedure due to the increased burden of meeting DOE's CCE regulations. (AHRI, No. 0005 at pp. 139–140) AHRI, Follett, and Scotsman agreed that potable water use should not be regulated as part of this rulemaking. (AHRI, No. 0015 at pp. 3–4; Follett, No. 0008 at p. 2; Scotsman, No. 0010 at p. 3) Manitowoc added that, for continuous type machines, essentially all potable water is converted to ice product, so there is no significant variation among available models; and for batch machines, potable water use is related to energy efficiency, which drives manufacturers to minimize potable water use in achieving higher energy efficiency. Manitowoc also offered that, depending on the design of the batch ice machine, there is an optimum range where further reduction in potable water use can dramatically affect the reliability of the ice machine and the quality of the ice that it produces, and stated that establishing regulations on potable water use without understanding these limits and trade-offs could significantly affect life-cycle cost to the end user. (Manitowoc, No. 0009 at p. 3)

Conversely, Howe contended that there should be a calculation for potable water use in ice machines because chilled waste water is currently collected along with ice and is included in the measured production capacity of some ice machines, while waste water is ignored in other machines. (Howe, No. 0005 at p. 132; Howe, No. 0005 at pp. 145–146) Howe also contended that this requirement should apply to batch type and continuous type ice machines. (Howe, No. 0017 at pp. 5–6)

NEEA and NRDC stated that establishing a measurement for potable water in the test procedure would be beneficial, but that standards for potable water consumption may not be required. (NEEA, No. 0005 at pp. 136–137; NRDC, No. 0005 at p. 135) The CA IOUs, NRDC, and NEEA recommended that DOE adopt in this test procedure rulemaking the test method to measure potable water as outlined in the AHRI/ASHRAE standards, and disagreed with DOE regarding the Department's authority to regulate potable water, as prescribed in EPCA. (CA IOUs, No. 0011 at p. 3; NRDC, No. 0012 at p.2; NEEA, No. 0013 at pp. 4–5) The CA IOUs, ICF International (ICF), and NEEA further stated that the potable water use of more than half of commercial ice makers shipped in the United States is currently being measured and reported by manufacturers for ENERGY STAR qualification and, as such, adding a method to measure the potable water use should not significantly increase the testing burden for manufacturers. (CA IOUs, No. 0011 at p. 3; ICF, No. 0005 at p. 141; NEEA, No. 0013 at pp. 4–5)

Earthjustice, NEEA, and NRDC commented that, although Congress has not directly instructed the Department to regulate potable water use, DOE has the authority to do so in accordance with the purposes of EPCA and with Congress' intent to achieve energy savings by regulating automatic commercial ice makers. Earthjustice and NRDC also stated that the reporting of potable water consumption data would be valuable in its own right for specifiers, end users, and water supply utilities. (NRDC, No. 0012 at p. 2; NEEA, No. 0013 at pp. 4–5; Earthjustice, No. 0005 at p. 150)

Earthjustice also responded to DOE's interpretation that the footnote to the table at 42 U.S.C. 6313(d)(1) suggests that Congress specifically considered potable water use, and excluded it. (Earthjustice, No. 0005 at p. 132) Earthjustice claimed that DOE's admission that EPCA has left a ''gray area'' surrounding the Department's authority to adopt potable water standards for ice makers suggests that DOE views this issue as one of interpreting an ambiguous statute—an activity in which courts grant substantial deference to the executive branch. Earthjustice pointed to *Chevron* v. *NRDC,* 467 U.S. 837, 843–44 (1984), as the controlling precedent. Earthjustice stated that it would be unreasonable to conclude that Congress intended to prohibit DOE from adopting potable water standards for ice makers, as the note following the table in 42 U.S.C. 6313(d)(1) by its own terms applies only to the initial standards codified in EPACT 2005, and had Congress intended to restrict DOE's authority to adopt water consumption standards encompassing potable water

[5] U.S. Environmental Protection Agency. *Commercial Ice Machines Key Product Criteria.* 2008. (Last accessed March 5, 2011.) *http://www.energystar.gov/index.cfm?c=comm_ice_machines.pr_crit_comm_ice_machines*

use, it could have easily provided that DOE is only authorized to adopt revised energy use and condenser water use standards. Instead, argued Earthjustice, the fact that Congress clarified the inapplicability of the EPACT 2005 standards to potable water consumption but did not enact express language to similarly limit DOE's authority in subsequent rulemakings indicates that DOE is authorized to require the measurement and regulation of potable water consumption. (Earthjustice, No. 0014 at pp. 2–3)

DOE acknowledges the commenters' concerns regarding the coverage of potable water consumption in the ACIM test procedure. Regarding DOE's authority to promulgate an ACIM test procedure addressing potable water use, DOE notes that 42 U.S.C. 6313(d) does not require DOE to develop a water conservation test procedure or standard for potable water use in cube type ice makers or other automatic commercial ice makers. Rather, it sets forth energy and condenser water use standards for cube type ice makers at 42 U.S.C. 6313(d)(1), and allows, but does not require, the Secretary to issue analogous standards for other types of automatic commercial ice makers under 42 U.S.C. 6313(d)(2).

Ambiguous statutory language may lead to multiple interpretations in the development of regulations. As the U.S. Supreme Court has held, ''[i]f [a] statute is ambiguous on [a] point, we defer * * * to the agency's interpretation so long as the construction is 'a reasonable policy choice for the agency to make.' '' *Nat'l Cable & Telecomms. Ass'n* v. *Brand X Internet Servs.,* 545 U.S. 967, 986 (2005) (quoting *Chevron U.S.A. Inc.* v. *Natural Res. Def. Council, Inc.,* 467 U.S. 837, 845 (1984)). DOE believes that it is unclear whether the footnote on potable water use that appears in 42 U.S.C. 6313(d)(1) has a controlling effect on 42 U.S.C. 6313(d)(2) and 42 U.S.C. 6313(d)(3). Potable water use is not referenced anywhere else in 42 U.S.C. 6313(d), and thus it is difficult to determine whether this footnote is a clarification or a mandate in regard to cube type ice makers, and furthermore, whether it would apply to the regulation of other types of automatic commercial ice makers. Without a clear mandate from Congress on potable water use generally, and given that Congress chose not to regulate potable water use for cube type ice makers by statute, DOE exercises its discretion in choosing not to include potable water use in its test procedure for automatic commercial ice makers.

While there is generally a positive relationship between energy use and potable water use, DOE understands that at a certain point the relationship between potable water use and energy consumption reverses due to scaling. Based on this fact, and given the added complexity inherent to the regulation of potable water use and the concomitant burden on commercial ice maker manufacturers, DOE will not regulate or require testing and reporting of the potable water use of automatic commercial ice makers at this time. Although AHRI Standard 810–2007 with Addendum 1 already includes a measurement of potable water consumption, and reporting of potable water use is required by the ENERGY STAR program, neither performance of AHRI Standard 810–2007 nor participation in the ENERGY STAR program is mandatory. Because DOE test procedures are mandatory for all equipment sold in the United States, DOE must be more cognizant of burden and the limitation of products or features when determining the test procedures and energy conservation standards for covered equipment.

Earthjustice, NRDC, and NEEA noted that among the stated purposes of EPCA, as amended by EPACT 1992, is the conservation of water in certain plumbing products and appliances under 42 U.S.C. 6201(8). (Earthjustice, No. 0014 at pp. 2–3; NRDC, No. 0012 at p.2; NEEA, No. 0013 at pp. 4–5) At the time of its adoption, the language of 42 U.S.C. 6201(8) supported DOE's regulation of water use efficiency in plumbing products such as showerheads, faucets, water closets, and urinals. Congress added the regulation of automatic commercial ice makers later, in EPACT 2005. Given that Congress often amends portions of statutes in subsequent legislation, courts have had to examine how to interpret unchanged parts of the statute in light of amended sections of the same statute. The U.S. Supreme Court has held that ''a specific policy embodied in a later Federal statute should control construction of the earlier statute.'' *Food & Drug Admin.* v. *Brown & Williamson Tobacco Corp.,* 529 U.S. 120, 143 (2000). Congress set forth the general purposes of its energy and water conservation program for appliances in 42 U.S.C. 6201, but later established more specific requirements for certain products, including automatic commercial ice makers. In EPACT 2005, Congress required DOE to issue standards for automatic commercial ice makers, but excluded consideration of potable water use. Earthjustice noted that DOE currently regulates water use in residential clothes washers (Earthjustice, No. 0014 at pp. 2–3), but again, this is not controlled by 42 U.S.C. 6201(8). DOE did not regulate water use for residential clothes washers under 42 U.S.C. 6295(g) until directed to by Congress in EISA 2007, section 311(a)(2). Thus, DOE chooses today to interpret 42 U.S.C. 6201(8) consistently with how it has interpreted the provision in the past: as a general guiding principle that is implemented through provisions within EPACT 1992 and subsequent amendments for specific products and equipment.

In summary, DOE is using its discretion to not cover potable water in this rulemaking to limit the burden on manufacturers, especially considering that standards for potable water do not currently exist and are not being considered in the concurrent ACIM energy conservation standards rulemaking (Docket No. EERE–2010–BT–STD–0037).

6. Standardization of Water Hardness for Measurement of Potable Water Used in Making Ice

Differences in water hardness can cause ice machines to use more or less energy and water. Harder water has a greater concentration of total dissolved solids and chemical ions, which affects the thermal properties of the water. Harder water depresses the freezing temperature of water and results in increased energy use to produce the same quantity of ice. In addition, harder water requires a higher purge setting to prevent scaling and a decrease in ice clarity. While DOE recognizes that differences in water hardness can affect the energy and water consumption of an automatic commercial ice maker, DOE believes that there is still uncertainty in the causal relationship between total dissolved solids, ion concentration, and ice maker performance. Given the uncertainty in the relationship between water hardness and water and energy consumption, DOE proposed in the April 2011 NOPR not to standardize water hardness in the test procedure, but requested additional data that would support evaluation of the need for a standardized water hardness test. Specifically, DOE requested additional data or information regarding (1) The relationship between total dissolved solids, ion concentration, and energy and water use; (2) the magnitude of these effects; and (3) specific testing methodologies that would produce repeatable results. 76 FR at 18437 (April 4, 2011).

Manitowoc, Follett, and NEEA supported DOE's recommendation to not bring water hardness into the rulemaking. (Manitowoc, No. 0005 at p.

154; Follett, No. 0008 at p. 2; NEEA, No. 0013 at p. 5) Manitowoc and NEEA agreed that water hardness or quality has a greater effect on reliability and maintenance than it does on energy efficiency of commercial ice makers and felt it would be a significant effort to properly define and obtain ''standard hardness'' water for testing purposes. (Manitowoc, No. 0009 at p. 3; NEEA, No. 0013 at p. 5) Scotsman suggested that, if water hardness were indeed a significant factor in energy consumption, it would become apparent in the certification and enforcement actions related to the equipment and the Department could move to standardize it at that time, after DOE had collected more information. (Scotsman, No. 0005 at pp. 158–159) Scotsman also offered that it knows anecdotally that water hardness will impact the hardness of flake and nugget ice, but does not have data at this time to present a correlation. (Scotsman, No. 0010 at p. 3) NRDC suggested that the Department consider a range of acceptable water hardness values as a condition for the test procedure. (NRDC, No. 0005 at p. 154) Hoshizaki suggested that if DOE considers a band of water hardness values that are acceptable to test within, it should make sure that water of a value within the band is geographically available everywhere across the United States. (Hoshizaki, No. 0005 at p. 162)

DOE appreciates interested parties' comments and agrees that there is still uncertainty in the causal relationship between total dissolved solids, ion concentration, and ice maker performance. Specifically, it is not clear whether total dissolved solids or ion concentration is more significant in impacting the energy performance of an ice maker. DOE did not receive any additional data that would suggest the proper test procedure specifications for water hardness. As such, DOE maintains that an appropriate standardized water hardness for use in a test procedure cannot be accurately specified at this time, and even if it could, applying such a test procedure would increase the testing burden for manufacturers. In addition, the primary effect of increasing water hardness would be increased potable water used in making ice. This is because the potential for scale formation increases with higher water hardness, requiring an increase in the dump water used in batch type ice machines that produce cube type ice. Since DOE is not addressing potable water in this rulemaking, DOE is not standardizing water hardness in the test procedure at this time, but requests additional data that would support evaluation of the need for a standardized water hardness test.

7. Testing of Batch Type Ice Makers at the Highest Purge Setting

At the energy conservation standard Framework document public meeting, ASAP cautioned that installers may install cube type ice makers with a purge setting in the highest water use position, which may substantially increase water consumption in the field compared to the manufacturer tested water consumption. (Docket No. EERE–2010–BT–STD–0037, ASAP, No. 0013 at p. 16) DOE does not have data to validate these claims and believes that the manufacturer-specified purge setting is how ice makers are meant to be installed in the field. Also, as DOE did not propose to regulate potable water used in making ice in the April 2011 NOPR, DOE did not believe it was justified to require testing of automatic commercial ice makers at the highest purge setting. Instead, DOE proposed to continue to require testing of automatic commercial ice makers in accordance with AHRI 810–2007 and ANSI/ASHRAE Standard 29–2009. DOE also committed to investigate the magnitude and effects of this issue by gathering data related to national water hardness, the difference between manufacturer recommended and maximum purge settings, and the way ice makers are typically installed in the field. 76 FR at 18437–38 (April 4, 2011).

In commenting on the April 2011 NOPR, Manitowoc, Hoshizaki, and Follett supported the current AHRI and industry practice to test ice makers at the water purge setting as instructed in the manufacturer's installation and operation manual for ''normal'' quality potable water. (Manitowoc, No. 0009 at p. 4; Hoshizaki, No. 0005 at p. 165; Follett, No. 0008 at p. 2) Scotsman suggested that if DOE were going to consider a standard that included variability in the level of purge, testing should be done at both a maximum flush level setting and a minimum flush level setting, to give manufacturers credit for water conserving purge options. (Scotsman, No. 0005 at p. 167)

NRDC commented that both energy and water consumption can vary considerably across the range of field-adjustable purge settings, ±3 percent for energy consumption and ±20 percent for potable water consumption, and recommended that ice makers be tested in their highest water consumption purge setting. (NRDC, No. 0012 at p. 2) The CA IOUs agreed that DOE should require testing of ice makers at the purge setting that uses the most water. (CA IOUs, No. 0011 at p. 4) NEEA commented that the specification to test ice machines with the ''as shipped'' purge setting would lead to all units being shipped in the minimum purge mode, resulting in very unrepresentative potable water use measurements. NEEA cautioned that this would violate the spirit, if not the letter, of 42 U.S.C. 6214(a)(2). (NEEA, No. 0013 at p. 5) NEEA and NRDC stated that the Department's proposal simply to allow manufacturers to specify the purge setting for testing purposes fails to maintain the integrity of the testing process and reduces the incentive to innovate in this area of machine performance. (NRDC, No. 0012 at p. 2; NEEA, No. 0013 at p. 5) Howe stated that, in order to standardize energy consumption and water usage, it is necessary to test at the highest purge setting, especially because energy usage increases as the purge setting increases. (Howe, No. 0017 at p. 6)

Although both AHRI 810–2007 and ANSI/ASHRAE Standard 29–2009 require that the ice makers be set up pursuant to the manufacturer's instruction, DOE acknowledges that this may not capture the maximum potable water consumption of the unit or, perhaps, the most common water consumption setting of the unit. DOE found that the manufacturers recommended purge setting is typically an intermediate purge setting which is adequate for most parts of the U.S. Also, DOE found that some manufacturers who offered adjustable purge settings offered low purge settings, in addition to high purge settings, to conserve water in those places with low water hardness.

However, DOE has found no data or information related to how ice makers are currently installed in the field. Further, all previous test data are from tests conducted at this default test setting, and requiring testing at another level will make historical comparisons difficult and significantly increase the testing burden for all manufacturers, since manufacturers would be required to recertify all their models using the new test procedure. Also, changes in purge setting most strongly affect potable water consumption and affect energy use to a lesser degree. As DOE will not regulate potable water used in making ice in this rulemaking, and the preponderance of previous data come from tests conducted at the manufacturer recommended purge setting, DOE will require testing of automatic commercial ice makers in accordance with AHRI 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009 in this final rule and

will not further specify the required purge setting.

8. Consideration of Space Conditioning Loads

In written comments submitted in response to the April 2011 NOPR, Howe commented that the majority of air-cooled self-contained automatic commercial ice makers are located within air conditioned spaces (*e.g.,* motels/hotels, restaurants, bars, retail food markets, institutions, and airports). Howe opined that the total heat rejection of the automatic commercial ice maker, including the heat removed at the evaporator, heat related to suction-cooled hermetic and semi-hermetic compressors, and the fan/motor efficiency related heat, should be tested and published so that consulting engineers can accurately calculate the sensible heat gain to the air conditioned space.

Howe illustrated, saying a 970 pound per 24 hour output automatic commercial ice maker located in a 70 °F space supplied with 50 °F water adds the total rejected heat of 8,450 Btu to the space, which must be removed by the building cooling system, while the energy consumption of this automatic commercial ice maker is 3.8 kWh per 100 pounds of ice. The energy consumed by the building cooling system to remove this sensible internal heat gain to the conditioned space is estimated to be 0.85 kWh, or 22 percent of the energy consumed by the ice maker in question. Howe also stated that no intermediate cooling is required if this heat is rejected directly to outdoor air and provided the four examples of water cooled condensers, remote air cooled condensers, remote dedicated split condensing units, and an ice machine that is field-connected to a remote compressor rack (field-built refrigeration system) that serves other evaporators throughout the building. (Howe, No. 0017 at pp. 8–9)

DOE acknowledges that the total rejection of heat indoors for air-cooled self-contained and ice-making head automatic commercial ice makers may impact space cooling loads, but DOE expects changes from revised and new ice maker standards to be negligible. In chapter 2 of the preliminary technical support document for commercial refrigeration equipment that DOE published on March 30, 2011, DOE determined that the effect of efficiency improvements in self-contained commercial refrigeration equipment on space conditioning loads was negligible.[6] DOE expects the impact of efficiency improvements in automatic commercial ice makers to be less than that of commercial refrigeration equipment because there are typically fewer automatic commercial ice makers per building.[7] In addition, there is a high degree of variability in the impact of this rejected heat on the total building heating and cooling load due to differences in weather, building size, and building type. In cold climates, the additional heat rejected by the ice maker may decrease building space heating loads. Moreover, requiring testing and reporting of the total heat rejection of automatic commercial ice makers would increase the testing and reporting burden for self-contained and ice-making head equipment. DOE does not believe this increase in testing burden for some ice makers is justified given the magnitude of impact ice makers are expected to have on space conditioning loads. Manufacturers may publish total heat rejection information and engineers may request this information when it is required, but DOE does not believe it will be required in all cases and, further, believes that it is not relevant to DOE's standards for automatic commercial ice makers. DOE is not including testing or reporting for total heat rejection of automatic commercial ice makers in this final rule.

9. Burden Due to Cost of Testing

Under 42 U.S.C. 6314, EPCA sets forth the criteria and procedures DOE must follow when prescribing or amending test procedures for covered equipment. EPCA requires that the test procedures promulgated by DOE be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs of the covered equipment during a representative average use cycle. EPCA also requires that the test procedure not be unduly burdensome to conduct. (42 U.S.C. 6314(a)(2))

At the April 2011 NOPR public meeting and in subsequent written comments, many interested parties commented on the burden of testing for manufacturers of automatic commercial ice makers. AHRI commented that the issue of regulatory burden is not associated with conducting the test itself, but with DOE's CCE requirements. AHRI emphasized that, accounting for DOE's CCE requirements, the cost to comply with the Federal standard would be 10 or 100 times what DOE projected. (AHRI, No. 0005 at p. 179) AHRI suggested that alternative energy determination methods, although not currently available for ice makers, could be developed to help manufacturers comply with DOE's regulations and reduce the burden on manufacturers. (AHRI, No. 0005 at p. 180)

Howe commented that, using DOE calculations of the cost of testing, the cost to Howe would range from $620,000 to $930,000 in the first year, and stated that this amount vastly exceeds what would be reasonable for a small manufacturer to absorb. Howe further commented that the costs of testing for small manufacturers as estimated in the NOPR are significantly understated for several reasons, including the fact that small manufacturers typically produce large, custom equipment that they are unable to test in current test facilities. Howe suggested that manufacturers of remote automatic commercial ice machines be allowed to test the most commonly sold remote ice maker configuration (ice maker, compressor, and condenser) for each productive capacity of automatic commercial ice maker and apply those energy consumption ratings to similar remote automatic commercial ice makers of the same productive capacity. (Howe, No. 0017 at pp. 6–8)

Conversely, NEEA contended that the testing required by AHRI Standards 810 and 820 is not overly burdensome to conduct, even including tests for potable water use and standby energy consumption. NEEA further stated that the tests proposed by the Department, along with a test for potable water consumption, standby energy use, and storage bin effectiveness, seem to be the minimum required to fully characterize the energy and water use of these products, and are the same tests that the manufacturers are already doing, whether it be for Canadian standards, ENERGY STAR, or AHRI product listings. (NEEA, No. 0013 at p. 5)

DOE notes that this final rule addresses only the incremental burden of the test procedure changes. DOE does not believe these test procedure amendments will significantly increase

[6] U.S. Department of Energy—Office of Energy Efficiency and Renewable Energy. Preliminary Technical Support Document (TSD): Energy Conservation Program for Certain Commercial and Industrial Equipment: Commercial Refrigeration Equipment, Chapter 2: Analytical Framework, Comments from Interested Parties, and DOE Responses. March 2011. Washington, DC *http://www1.eere.energy.gov/buildings/appliance_standards/commercial/pdfs/cre_pa_tsd_ch2_analytical_framework.pdf.*

[7] Navigant Consulting, Inc. *Energy Savings Potential and R&D Opportunities for Commercial Refrigeration, Final Report.* 2009. Prepared for the U.S. Department of Energy—Office of Energy Efficiency and Renewable Energy, Washington, DC *http://apps1.eere.energy.gov/buildings/publications/pdfs/corporate/commercial_refrig_report_10-09.pdf.*

the burden on manufacturers, and the amended test procedure is the minimum required to fully characterize and compare the performance of automatic commercial ice makers. DOE maintains that it is not possible to further limit the burden within the test procedure and still meet the requirements of EPCA that the test procedure be representative of ice maker performance during a typical period of use. (42 U.S.C. 6314(a)(2))

The purpose of this assessment of the burden of testing is to identify the changes in burden arising solely from the proposed changes in the test procedure. DOE acknowledges that other recent rulemakings also impact the overall burden on manufacturers to test and certify equipment for compliance with DOE's Appliances and Commercial Equipment Standards program. In the final rule DOE published on March 7, 2011, which established certification, compliance, and enforcement regulations for covered equipment (the CCE final rule), DOE established requirements for determining the number of units that must be tested and for designing a sampling plan for reliable testing. 76 FR at 12422. Currently, manufacturers must test a minimum of two units of each basic model to arrive at the maximum energy use rating for that basic model, unless otherwise specified. 76 FR at 12480 (March 7, 2011). Due to issues raised by some manufacturers of larger, custom equipment, including automatic commercial ice makers, on June 22, 2011 DOE published a revised final rule establishing new compliance dates for certification of automatic commercial ice makers, which is 18 months from publication in the **Federal Register**. 76 FR 38287 (June 30, 2011). DOE notes that the CCE final rule published March 7, 2011 is only applicable to automatic commercial ice makers for which standards were set in EPACT 2005, namely automatic commercial ice makers that produce cube type ice with capacities between 50 and 2,500 pounds of ice per 24 hours. For other types of ice makers covered under this test procedure final rule, CCE requirements have not yet been established and will be considered in a separate rulemaking.

DOE acknowledges manufacturers' concerns about the burden associated with the overall testing and certification of automatic commercial ice makers. To help reduce test burden on manufacturers of low production volume, such as highly customized equipment like automatic commercial ice makers, DOE is considering alternative energy determination methods or alternative rating methods for automatic commercial ice makers. DOE recently issued a request for information on this issue. 76 FR 21673 (April 18, 2011).

In response to Howe's comment, this test procedure rulemaking does not describe sampling plans or define basic model requirements for automatic commercial ice makers, because that information is in the CCE final rule. DOE notes that the CCE final rule establishes basic model definitions that allow manufacturers to group individual models with similar, but not exactly the same, energy performance characteristics into a basic model for purposes of fulfilling the Department's testing and certification requirements. The Department encourages manufacturers to group similar individual models as they would in current industry practice, provided all models identified in a certification report as being the same basic model have the same certified efficiency rating. The CCE final rule also establishes that the efficiency rating of a basic model must be based on the least efficient or most energy consuming individual model, or, put another way, all individual models within a basic model must be at least as good as the certified rating. The regulations also require certification of a new basic model if a modification results in an increase in energy or water consumption beyond the rated amount. 76 FR at 12428–29 (March 7, 2011).

The specific burden on small manufacturers is discussed in DOE's revised final regulatory flexibility analysis, which can be found in section IV.B of this document.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

The Office of Management and Budget (OMB) has determined that test procedure rulemakings do not constitute ''significant regulatory actions'' under section 3(f) of Executive Order 12866, ''Regulatory Planning and Review,'' 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the OMB.

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) whenever an agency is required to publish a general notice of proposed rulemaking. When an agency promulgates a final rule after being required to publish a general notice of proposed rulemaking, the agency must prepare a final regulatory flexibility analysis (FRFA). The requirement to prepare these analyses does not apply to any proposed or final rule if the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. If the agency makes such a certification, the agency must publish the certification in the **Federal Register** along with the factual basis for such certification.

As required by Executive Order 13272, ''Proper Consideration of Small Entities in Agency Rulemaking,'' 67 FR 53461 (Aug. 16, 2002), DOE published procedures and policies on February 19, 2003, so that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's Web site: *http://www.gc.doe.gov.*

DOE reviewed the proposed rule to amend the test procedure for automatic commercial ice makers under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003. DOE certified that the proposed rule, if adopted, would not result in a significant impact on a substantial number of small entities. DOE received comments on the economic impacts of the test procedure and responds to these comments in section III.B.9. After consideration of these comments, DOE continues to certify that the test procedure amendments set forth in today's final rule will not have a significant impact on a substantial number of small entities. The factual basis for this certification is set forth below.

For manufacturers of automatic commercial ice makers, 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 size standards published on January 31, 1996, as amended, to determine whether any small entities would be required to comply with the rule. *See* 13 CFR part 121. The standards are listed by North American Industry Classification System (NAICS) code and industry description and are available at *http://www.sba.gov/sites/default/files/Size_Standards_Table.pdf.* ACIM manufacturers are classified under NAICS 333415, ''Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing.'' The SBA sets a threshold of 750 employees or less for

an entity to be considered as a small business for this category.

DOE conducted a market survey using all available public information to identify potential small manufacturers who could be impacted by today's final rule. DOE reviewed industry trade association membership directories (including the Association of Home Appliance Manufacturers (AHAM)), product databases (*e.g.,* Federal Trade Commission (FTC), the Thomas Register, California Energy Commission (CEC) and ENERGY STAR databases), individual company Web sites, and marketing research tools (*e.g.,* Dun and Bradstreet reports) to create a list of companies that manufacture or sell automatic commercial ice makers covered by this rulemaking. DOE reviewed this data to determine whether the entities met the SBA's definition of a small business and manufactured automatic commercial ice makers. DOE screened out companies that do not offer products covered by this rulemaking, do not meet the definition of a ''small business,'' or are foreign owned and operated.

DOE initially identified 24 manufacturers of automatic commercial ice makers available in the United States. Of these 24 companies, 10 were determined to be foreign owned or have more than 750 employees, meaning that they would not qualify as small businesses. Of the remaining 14 entities, 5 manufacture ice makers for residential uses and 1 has filed for bankruptcy. Thus, DOE identified 8 manufacturers that produce covered automatic commercial ice makers and can be considered small businesses.

Table IV.1 stratifies the small businesses according to their number of employees. The smallest company has 5 employees and the largest has 175 employees. The majority of the small businesses affected by this rulemaking (75 percent) have fewer than 50 employees and all but one of the small businesses have fewer than 100 employees.

TABLE IV.1—SMALL BUSINESS SIZE BY NUMBER OF EMPLOYEES

Number of employees	Number of small businesses	Percentage of small businesses	Cumulative percentage
1–50	6	76	75
51–100	1	13	88
101–150	0	0	88
151–200	1	13	100

This final rule amends the test procedure for automatic commercial ice makers. Specifically, DOE is incorporating revisions to the DOE test procedure that:

1. Update the references to AHRI Standard 810–2007 with Addendum 1 and ANSI/ASHRAE Standard 29–2009;
2. Expand the scope of the test procedure to include equipment with capacities from 50 to 4,000 pounds of ice per 24 hours;
3. Provide test methods for continuous type ice makers and standardize the measurement of energy and water use for continuous type ice makers with respect to ice hardness;
4. Clarify the test method and reporting requirements for remote condensing automatic commercial ice makers designed for connection to remote compressor racks; and
5. Discontinue the use of a clarified energy use rate calculation and instead calculate energy use per 100 pounds of ice as specified in ANSI/ASHRAE Standard 29–2009.

Changes to the existing rule as described in the preceding paragraph have potential impacts on manufacturers who will be required to revise their current testing program to comply with DOE's energy conservation standards. DOE has analyzed these impacts on small businesses and presents its findings in the remainder of this section.

Currently, only automatic commercial ice makers that produce cube type ice with capacities between 50 and 2,500 pounds of ice per 24 hours must be tested using the DOE test procedure to show compliance with energy conservation standards established in EPACT 2005. Automatic commercial ice makers with larger capacities, batch type ice makers that produce other than cube type ice, and continuous type ice makers of any capacity have not been subject to this rule. This rulemaking would institute new testing requirements for automatic commercial batch type ice makers that produce cube type ice with capacities between 2,500 and 4,000 pounds of ice per 24 hours, batch type ice makers that produce other than cube type ice with capacities between 50 and 4,000 pounds of ice per 24 hours, and continuous type ice makers with capacities between 50 and 4,000 pounds of ice per 24 hours. The costs to manufacturers associated with these test procedures were estimated to range from $5,000 to $7,500 per tested model. This estimate is based on input from manufacturers and third-party testing laboratories for completing a test as specified by AHRI Standard 810–2007 with Addendum 1 on automatic commercial ice makers. Additional testing requirements will be mandatory for continuous type ice makers to assess ice hardness, as discussed in the following paragraph.

The additional test methods required for continuous type ice makers will standardize energy and water use with respect to ice hardness. This test will consist of performing an additional calorimetry test, as specified in ASHRAE Standard 29–2009, normative annex A. DOE estimates that performing this test will require 2 additional hours of laboratory time, including the time to perform necessary calculations, per unit. Costs associated with the calorimetry test have been estimated by DOE to equal approximately 10 percent of the AHRI 810 test or $500 to $740. These costs would not include those associated with transportation, assuming that the unit would be analyzed at the same time as the required AHRI 810 test. DOE estimates that 28 percent of all automatic commercial ice makers would be subject to this additional test procedure. This estimate was developed based on publicly available listings of automatic commercial ice makers (*e.g.,* AHRI and CEC databases) and manufacturer Web sites.

The primary cost for small businesses under this rulemaking would result from the aforementioned additional testing requirements. These costs were applied to the number of existing designs subject to testing requirements outlined in this rulemaking, which DOE estimated at 30 models (for all small businesses combined) in the April 2011 NOPR. DOE based the April 2011 NOPR estimate on an estimate of fundamental ACIM individual model offerings, consolidated into basic models based on similar features. For example, DOE estimated that each capacity of each unique product line (typically

determined by SKU numbers) represented a separate basic model that was required to be certified. DOE researched manufacturer catalogs and publically available databases to determine the number of unique product lines and capacities manufacturers offered to arrive at the estimate of 30 basic models for all small businesses.

Based on DOE's review of public comments in response to the April 2011 NOPR and a detailed discussion of model characteristics with one small manufacturer, the number of models affected by these test procedures was increased to 264 models for all small manufacturers. This increase was based on the number of different features offered within each product line that DOE did not account for in the April 2011 NOPR estimate, such as different refrigerants. Further, DOE assumes that each company would introduce a new base model (8 new models for testing) in each year of the 5-year (2015–2019) analysis time horizon (for a total of 40 new models for testing). Thus, costs are higher in the first year following implementation of the new testing requirements as existing models are tested but decline in future years as the requirements are applied only to new models. Two scenarios were developed to reflect the low- and high-end cost estimates for each test presented previously in this section. Based on these assumptions, testing costs for small businesses were estimated at $1.4 to $2.0 million in 2015 and $41,120 to $60,858 in 2016 through 2019. DOE presents the costs for the testing of all of these models in Table IV.2. As discussed below, however, DOE notes that based on grouping of similar basic models, the total number of models to be tested is likely to be significantly smaller.

In addition to testing costs, DOE estimates an additional $24,572 in review and filing costs over the 5-year analysis time horizon. DOE bases its estimate on the assumptions that it would take an engineer 2 hours to communicate with the testing laboratory, review test results, prepare adequate documentation, and file the report. The average hourly salary for an engineer completing these tasks is estimated at $38.74.[8] Fringe benefits are estimated at 30 percent of total compensation, which brings the hourly costs to employers associated with review and filing of reports to $55.34.[9]

The incremental costs incurred by small businesses to implement the requirements of this rulemaking are summarized in Table IV.2. Total costs to small businesses are estimated at $1.5 to $2.3 million over the 5-year analysis time horizon. The present value costs of this rulemaking on small businesses are estimated at $1.2 to $1.7 million, or $144,989 to $213,477 per small business, for an average annual cost of $28,998–$42,695. Annual costs are discounted using a 7-percent real discount rate, as recommended in OMB Circular A–94.

TABLE IV.2—ANNUAL COSTS OF COMPLIANCE FOR SMALL BUSINESSES (2015–2019)

Year	Testing costs		Review/filing costs	Total costs		Discounted costs	
	Low end	High end		Low end	High end	Low end	High end
2015	$1,356,960	$2,008,301	$21,916	$1,378,876	$2,030,217	$1,051,938	$1,548,843
2016	41,120	60,858	664	41,784	61,522	29,791	43,864
2017	41,120	60,858	664	41,784	61,522	27,843	40,995
2018	41,120	60,858	664	41,784	61,522	26,021	38,313
2019	41,120	60,858	664	41,784	61,522	24,319	35,806
Totals	1,521,440	2,251,731	24,572	1,546,012	2,276,303	1,159,912	1,707,820
Average Cost per Small Business						144,989	213,477

DOE also estimated costs to small businesses using CCE basic model definitions, which allow manufacturers to group individual models with similar, but not exactly the same, energy performance characteristics into basic models for purposes of compliance with DOE's regulations. 76 FR at 12428–29 (March 7, 2011). DOE reviewed product literature and manufacturer Web sites to determine, on average, the number of individual models that could be grouped together into representative basic models. DOE determined that, for automatic commercial ice makers, an average of eight individual models could be grouped into basic models for the purposes of compliance with DOE's energy conservation standards, thus reducing the number of models that would require testing from 264 to 33. DOE's CCE requirements also require that each model be tested twice. Using the provisions for basic model grouping established in DOE's CCE final rule, DOE estimated the costs to small businesses to be between $673,596 and $994,332 over the 5-year analysis time horizon. The present value costs of this rulemaking on all small businesses under this scenario are estimated at $475,126 to $701,360, or $59,391 to $87,670 per small business, for an average annual cost of $11,878 to $17,534.

The findings of the DOE analysis suggest that small business manufacturers of automatic commercial ice makers would not be disproportionally impacted by the test procedure amendments, relative to their competition. Testing procedures are required for each base model and only models produced by manufacturers that are covered by this rule would be required to be tested. DOE research indicates that the small entities affected by this regulation produce fewer automatic commercial ice makers, on average, when compared to larger businesses. Small businesses manufacture, on average, 264 individual models and 33 basic models covered by this rule, while large businesses manufacture an average of 2,176 individual models and 272 basic models. Thus, small businesses are subject to fewer testing procedures, and testing costs for large businesses are estimated to be approximately 8.2 times higher than costs for small businesses. DOE has, therefore, concluded that large and small entities would incur a

[8] U.S. Department of Labor, Bureau of Labor Statistics. *National Occupational Employment and Wage Estimates.* 2009. Washington, DC.

[9] U.S. Department of Labor, Bureau of Labor Statistics. *Employer Costs for Employee Compensation—Management, Professional, and Related Employees.* 2010. Washington, DC.

proportional distribution of costs associated with the new testing requirements.

DOE conducted an analysis to measure the maximum testing cost burden relative to the gross profits of small manufacturers. The costs used in this analysis are the total cost to small businesses if they were to test each individual model, as presented in Table IV.2. DOE notes that these testing costs could be reduced by grouping individual models into basic models for the purpose of certification with existing energy conservation standards, as explained above. The analysis utilized financial data gathered from other public sources to derive the average annual gross profits of the small businesses impacted by this rule. The average industry gross profit margin was estimated at 29.0 percent.[10] The annualized costs associated with this rulemaking were then compared to estimated gross profits to determine the magnitude of the cost impacts of this regulation on small businesses. Based on this analysis, DOE estimates that the total increase in testing burden amounts to approximately 0.5 to 0.7 percent of gross profit for the small manufacturers affected by this rule. DOE further estimates that the cost burden of the testing procedures is equal to approximately 0.1 to 0.2 percent of average annual sales ($8.9 million [11]) per small entity affected by this regulation. DOE concludes that these values do not represent a significant economic impact.

Based on the criteria outlined above, DOE continues to certify that the test procedure amendments would not have a ''significant economic impact on a substantial number of small entities.'' DOE has transmitted 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).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of automatic commercial ice makers must certify to DOE that their equipment complies with any applicable energy conservation standards. In certifying compliance, manufacturers must test their equipment according to the DOE test procedure for automatic commercial ice makers, including any amendments adopted for the test procedure. DOE has established regulations for the certification and record-keeping requirements for all covered consumer products and commercial equipment, including automatic commercial ice makers. 76 FR 12422 (March 7, 2011). 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 20 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.

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 final rule, DOE amends its test procedure for automatic commercial ice makers. DOE has determined that this 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, this rule amends an existing rule without affecting the amount, quality, or distribution of energy usage, and therefore will not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. 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 at 13735. DOE examined this final rule and determined that it will 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 equipment that is the subject of today's final 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 determine whether they are met or it is unreasonable to meet one or more of them. DOE has completed the required

[10] BizStats. *Free Business Statistics and Financial Ratios. Industry Income-Expense Statements.* (Last accessed February 17, 2011.) <*http://www.bizstats.com/corporation-industry-financials/manufacturing-31/machinery-manufacturing-333/ventilation-heating-a-c-and-commercial-refrigeration-equipment-333410/show*>.

[11] Calculated based on data obtained from *http://www.manta.com* and Dun and Bradstreet reports.

review and determined that, to the extent permitted by law, this final 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 regulatory action resulting 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 at 12820; also available at *http://www.gc.doe.gov.* DOE examined today's final 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. Today's final rule will 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 regulation will 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). DOE has reviewed today's final 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 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 significant energy action, the agency must give a detailed statement of any adverse effects on energy supply, distribution, or use if the regulation is implemented, and of reasonable alternatives to the action and their expected benefits on energy supply, distribution, and use.

Today's regulatory action 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 provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the NOPR 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 FTC concerning the impact of the commercial or industry standards on competition.

This final rule incorporates testing methods contained in the following commercial standards:

1. AHRI Standard 810–2007 with Addendum 1, which supersedes AHRI Standard 810–2003, ''2007 Standard for Performance Rating of Automatic Commercial Ice Makers,'' section 3, ''Definitions,'' section 4, ''Test Requirements,'' and section 5, ''Rating Requirements'' into 10 CFR 431.134(b); and

2. ANSI/ASHRAE Standard 29–2009, which supersedes ANSI/ASHRAE Standard 29–1988 (RA 2005), ''Method of Testing Automatic Ice Makers,'' 10 CFR 431.134(b) and (b)(2).

DOE has consulted with both the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in these standards and has received no comments objecting to their use.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of today's rule before its effective date. The report will state that it has been determined that the rule is not a ''major rule'' as defined by 5 U.S.C. 804(2).

V. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this final rule.

List of Subjects in 10 CFR Part 431

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

Issued in Washington, DC, on December 20, 2011.

Kathleen B. Hogan,

Deputy Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons set forth in the preamble, DOE amends part 431 of title 10, Code of Federal Regulations to read as follows:

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.

■ 2. Section 431.132 is amended by adding in alphabetical order the definitions of ''batch type ice maker,'' ''continuous type ice maker,'' and ''ice hardness factor,'' and revising the definitions of ''cube type ice'' and ''energy use'' to read as follows:

§ 431.132 Definitions concerning automatic commercial ice makers.

* * * * *

Batch type ice maker means an ice maker having alternate freezing and harvesting periods. This includes automatic commercial ice makers that produce cube type ice and other batch technologies. Referred to as cubes type ice maker in AHRI 810 (incorporated by reference, see § 431.133).

Continuous type ice maker means an ice maker that continually freezes and harvests ice at the same time.

Cube type ice means ice that is fairly uniform, hard, solid, usually clear, and generally weighs less than two ounces (60 grams) per piece, as distinguished from flake, crushed, or fragmented ice. Note that this conflicts and takes precedence over the definition established in AHRI 810 (incorporated by reference, see § 431.133), which indicates that ''cube'' does not reference a specific size or shape.

Energy use means the total energy consumed, stated in kilowatt hours per one-hundred pounds (kWh/100 lb) of ice stated in multiples of 0.1. For remote condensing (but not remote compressor) automatic commercial ice makers and remote condensing and remote compressor automatic commercial ice makers, total energy consumed shall include the energy use of the ice-making mechanism, the compressor, and the remote condenser or condensing unit.

* * * * *

Ice hardness factor means the latent heat capacity of harvested ice, in British thermal units per pound of ice (Btu/lb), divided by 144 Btu/lb, expressed as a percent.

* * * * *

■ 3. Section 431.133 is revised to read as follows:

§ 431.133 Materials incorporated by reference.

(a) *General.* We incorporate by reference the following standards into Subpart H of Part 431. The material listed has been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Any subsequent amendment to a standard by the standard-setting organization will not affect the DOE regulations unless and until amended by DOE. Material is incorporated as it exists on the date of the approval and a notice of any change in the material will be published in the **Federal Register.** All approved material is available for inspection at the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza SW., Washington, DC 20024, (202) 586–2945, or go to: *http://www1.eere.energy.gov/buildings/appliance_standards/.* Also, this material is available for inspection at National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.* Standards can be obtained from the sources listed below.

(b) *AHRI.* Air-Conditioning, Heating, and Refrigeration Institute, 2111 Wilson Blvd., Suite 500, Arlington, VA 22201, (703) 524–8800, *ahri@ahrinet.org,* or *http://www.ahrinet.org.*

(1) AHRI Standard 810–2007 with Addendum 1, (''AHRI 810''), *Performance Rating of Automatic Commercial Ice-Makers,* March 2011; IBR approved for §§ 431.132 and 431.134.

(2) [Reserved].

(c) *ASHRAE.* American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 1791 Tullie Circle NE., Atlanta, GA 30329, (404) 636–8400, *ashrae@ashrae.org,* or *http://www.ashrae.org.*

(1) ANSI/ASHRAE Standard 29–2009, (''ANSI/ASHRAE 29''), *Method of Testing Automatic Ice Makers,* (including Errata Sheets issued April 8, 2010 and April 21, 2010), approved January 28, 2009; IBR approved for § 431.134.

(2) [Reserved].

■ 4. Section 431.134 is revised to read as follows:

§ 431.134 Uniform test methods for the measurement of energy and water consumption of automatic commercial ice makers.

(a) *Scope.* This section provides the test procedures for measuring, pursuant to EPCA, the energy use in kilowatt hours per 100 pounds of ice (kWh/100 lb ice) and the condenser water use in gallons per 100 pounds of ice (gal/100 lb ice) of automatic commercial ice makers with capacities between 50 and 4,000 pounds of ice per 24 hours.

(b) *Testing and Calculations.* Measure the energy use and the condenser water use of each covered product by conducting the test procedures set forth in AHRI 810, section 3, ''Definitions,'' section 4, ''Test Requirements,'' and section 5, ''Rating Requirements'' (incorporated by reference, see § 431.133). Where AHRI 810 references ''ASHRAE Standard 29,'' ANSI/ASHRAE Standard 29–2009 (incorporated by reference, see § 431.133) shall be used. All references to cube type ice makers in AHRI 810 apply to all batch type automatic commercial ice makers.

(1) For batch type automatic commercial ice makers, the energy use and condenser water use will be reported as measured in this paragraph (b), including the energy and water consumption, as applicable, of the ice-making mechanism, the compressor, and the condenser or condensing unit.

(2)(i) For continuous type automatic commercial ice makers, determine the energy use and condenser water use by multiplying the energy consumption or condenser water use as measured in this paragraph (b) by the ice hardness adjustment factor, determined using the following equation:

$$\text{Ice Hardness Adjustment Factor} = \left[\frac{144\,^{\text{Btu}}/_{\text{lb}} + 38\,^{\text{Btu}}/_{\text{lb}}}{144\,^{\text{Btu}}/_{\text{lb}} \times \left(^{\text{Ice Hardness Factor}}/_{100}\right) + 38\,^{\text{Btu}}/_{\text{lb}}}\right]$$

(ii) Determine the ice hardness factor by following the procedure specified in the ''Procedure for Determining Ice Quality'' in section A.3 of normative annex A of ANSI/ASHRAE 29 (incorporated by reference, see § 431.133), except that the test shall be conducted at an ambient air temperature of 70 °F ± 1 °F, with an initial water temperature of 90 °F ± 1 °F, and weights shall be accurate to within ± 2 percent of the quantity measured. The ice hardness factor is equivalent to the corrected net cooling effect per pound of ice, line 19 in ANSI/ASHRAE 29 Table A1, where the calorimeter constant used in line 18 shall be that determined in section A2 using seasoned, block ice.

[FR Doc. 2012–218 Filed 1–10–12; 8:45 am]

BILLING CODE 6450–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA–2010–1193; Amdt. No. 25–136]

RIN 2120–AJ80

Harmonization of Airworthiness Standards for Transport Category Airplanes—Landing Gear Retracting Mechanisms and Pilot Compartment View

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The Federal Aviation Administration amends the airworthiness standards for transport category airplanes on landing gear retracting mechanisms and the pilot compartment view. For the landing gear retracting mechanism, this rulemaking adopts the 1-g stall speed as a reference stall speed instead of the minimum speed obtained in a stalling maneuver and adds an additional requirement to keep the landing gear and doors in the correct retracted position in flight. For the pilot compartment view, this rulemaking revises the requirements for pilot compartment view in precipitation conditions. This action eliminates regulatory differences between the airworthiness standards of the U.S. and the European Aviation Safety Agency (EASA), without affecting current industry design practices.

DATES: Effective March 12, 2012.

ADDRESSES: For information on where to obtain copies of rulemaking documents and other information related to this final rule, see ''How To Obtain Additional Information'' in the **SUPPLEMENTARY INFORMATION** section of this document.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this action, contact Mahinder Wahi, Federal Aviation Administration, Propulsion and Mechanical Systems Branch, ANM–112, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, WA 98057; telephone (425) 227–1262; facsimile (425) 227–1320, email *mahinder.wahi@faa.gov*.

For legal questions about this proposed rule, contact Doug Anderson, FAA, Office of the Regional Counsel (ANM–7), 1601 Lind Avenue SW., Renton, Washington 98057; telephone (425) 227–2166; facsimile (425) 227–1007; email *Douglas.Anderson@faa.gov*.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The FAA's authority to issue rules on aviation safety is found in Title 49 of the United States Code. Subtitle I, Section 106 describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the agency's authority.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, ''General requirements.'' Under that section, the FAA is charged with promoting safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for the design and performance of aircraft that the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority. It prescribes new safety standards for the design and operation of transport category airplanes.

List of Abbreviations Frequently Used in This Document

Term	Definition
V_S	the stalling speed or the minimum steady flight speed at which the airplane is controllable.
V_{S1}	the stalling speed or the minimum steady flight speed obtained in a specific configuration.
V_{SR}	reference stall speed and may not be less than a 1-g stall speed.
V_{SR1}	reference stall speed in a specific configuration.
1-g stall speed	minimum speed at which the airplane can develop the usable maximum lift force capable of supporting the weight of the airplane.

List of Acronyms Frequently Used in This Document

ALPA Airline Pilots Association
ANAC Agência Nacional de Aviação Civil
ARAC Aviation Rulemaking Advisory Committee
EASA European Aviation Safety Agency
FAA Federal Aviation Administration
ICAO International Civil Aviation Organization
JAA European Joint Aviation Authorities
NPRM Notice of Proposed Rulemaking
RFA Regulatory Flexibility Act
SBREFA Small Business Regulatory Enforcement Fairness Act

I. Overview of Final Rule

This action harmonizes airworthiness certification standards for landing gear mechanisms and pilot compartment view for transport category airplanes with those of EASA. Harmonizing these airworthiness standards reduces costs to airplane manufacturers and operators while retaining the level of safety.

II. Background

A. Statement of the Problem

This rulemaking results from an agreement between the European Joint Aviation Authorities (JAA), the predecessor to EASA, and the FAA to harmonize certain airworthiness standards between the two authorities. Differences between the regulations of the FAA and foreign certification authorities increase the cost and complexity of certification without contributing significantly to safety. These rules result from the recommendations of the Aviation Rulemaking Advisory Committee, through its Mechanical Systems Harmonization Working Group (MSHWG).

B. Summary of the NPRM

The FAA published a notice of proposed rulemaking (NPRM), Docket No. FAA–2010–1193; Notice No. 10–19 in the **Federal Register** on January 5, 2011 (76 FR 472). The NPRM proposed to amend the standards for landing gear retraction mechanism and pilot compartment view to harmonize with the corresponding EASA standards. The proposed standards for landing gear addressed reference stall speed, positive means to keep the landing gear and doors in the correct retracted position, gear position indication, and protection of equipment on the landing gear and in the wheel well. The proposed standards for pilot compartment view addressed single failures of rain removal systems, alternatives to the openable side window requirement and certain environmental conditions.

The comment period for the NPRM ended on April 5, 2011.

C. General Overview of Comments

The FAA received comments from Airbus, Boeing Company, Bombardier, Cessna Aircraft Company, Embraer,