

**DEPARTMENT OF ENERGY****10 CFR Parts 429 and 430****[EERE–2022–BT–TP–0024]****RIN 1904–AF35****Energy Conservation Program: Test Procedure for Portable Electric Spas**

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

**ACTION:** Final rule.

**SUMMARY:** The U.S. Department of Energy (“DOE”) is establishing definitions, a test procedure, and representation provisions for portable electric spas. Currently, portable electric spas are not subject to DOE test procedures or energy conservation standards. DOE is adopting a test procedure for measuring the standby loss for portable electric spas. The test method references the relevant industry test standard with certain additions and modifications.

**DATES:** The effective date of this rule is July 13, 2023. Compliance with the final rule will be mandatory for representations of fill volume and standby loss made on or after the compliance date of any energy conservation standards for portable electric spas. The incorporation by reference of certain materials listed in this rule is approved by the Director of the Federal Register on July 13, 2023.

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

A link to the docket web page can be found at [www.regulations.gov/docket/EERE-2022-BT-TP-0024](http://www.regulations.gov/docket/EERE-2022-BT-TP-0024). The docket web page contains instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 287–1445 or by email: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

**FOR FURTHER INFORMATION CONTACT:**

Mr. Jeremy Domm, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, EE–2J, 1000

Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 586–9870. Email:

[ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Ms. Kristin Koernig, U.S. Department of Energy, Office of the General Counsel, GC–33, 1000 Independence Avenue SW, Washington, DC 20585–0121.

Telephone: (202) 586–3593. Email: [kristin.koernig@hq.doe.gov](mailto:kristin.koernig@hq.doe.gov).

**SUPPLEMENTARY INFORMATION:** DOE incorporates by reference the following industry standards into 10 CFR part 430:

ANSI/APSP/ICC–14 2019 American National Standard for Portable Electric Spa Energy Efficiency; ANSI-approved November 19, 2019.

Copies of ANSI/APSP/ICC–14 2019 can be obtained from the Pool & Hot Tub Alliance (“PHTA”), 2111 Eisenhower Avenue, Suite 500, Alexandria, VA 22314, or by going to [www.phta.org](http://www.phta.org).

CSA C374:11 (R2021) Energy performance of hot tubs and spas; published November 2011, Update No. 1—National Standard of Canada—April 2012.

Copies of CSA C374:11 (R2021) can be obtained from CSA Group, 178 Rexdale Blvd., Toronto, ON, Canada M9W 1R3, or by going to [www.csagroup.org](http://www.csagroup.org).

See section IV.N of this document for a further discussion of these standards.

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**I. Authority and Background**

DOE defines “portable electric spa” as a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water at the time of sale or sold separately for subsequent attachment. *See* 10 CFR 430.2. Currently, portable electric spas are not subject to DOE test procedures or energy conservation standards.

On September 2, 2022, DOE published a final determination in the **Federal Register** (“September 2022 Final Determination”) in which it determined that portable electric spas qualify as a “covered product” under Part A of Title III of the Energy Policy and Conservation Act, Public Law 94–163, as amended (“EPCA”).<sup>1</sup> 87 FR 54123. In the September 2022 Final Determination, DOE determined that coverage of portable electric spas is necessary or appropriate to carry out the purposes of EPCA, and that the average U.S. household energy use for portable electric spas is likely to exceed 100 kilowatt-hours (“kWh”) per year. *Id.* at 87 FR 54127.

Accordingly, portable electric spas are now included in the list of “covered products” for which DOE is authorized to establish and amend energy

<sup>1</sup> All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116–260 (Dec. 27, 2020), which reflect the last statutory amendments that impact Parts A and A–1 of EPCA.

conservation standards and test procedures. (42 U.S.C. 6292(a)(20))

The following sections discuss DOE's authority to establish a test procedure for portable electric spas and relevant background information regarding DOE's consideration of a test procedure for this product.

#### A. Authority

EPCA authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B of EPCA<sup>2</sup> established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency for certain products, referred to as “covered products.”<sup>3</sup> In addition to specifying a list of consumer products that are covered products, EPCA contains provisions that enable the Secretary of Energy to classify additional types of consumer products as covered products. To classify a consumer product as a covered product, the Secretary must determine that classifying the consumer product as a covered product is necessary or appropriate to carry out the purpose of EPCA and the average annual per household<sup>4</sup> use by such a product is likely to exceed 100 kWh per year. (42 U.S.C. 6292(b)(1))

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

The testing requirements consist of test procedures that manufacturers of

covered products must use as the basis for (1) certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA (42 U.S.C. 6295(s)), and (2) making other representations about the efficiency of those products (42 U.S.C. 6293(c)). Similarly, DOE must use these test procedures to determine whether the products comply with any relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

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

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

If the Secretary determines, on her own behalf or in response to a petition by any interested person, that a test procedure should be prescribed, the Secretary shall promptly publish in the **Federal Register** proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedure. The comment period on a proposed rule to prescribe a test procedure shall be at least 60 days and may not exceed 270

days. In prescribing a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2))

In addition, EPCA requires that DOE amend its test procedures for all covered products to integrate measures of standby mode and off mode energy consumption into the overall energy efficiency, energy consumption, or other energy descriptor, unless the current test procedure already incorporates the standby mode and off mode energy consumption, or if such integration is technically infeasible. (42 U.S.C. 6295(gg)(2)(A)(i)–(ii)) If an integrated test procedure is technically infeasible, DOE must prescribe separate standby mode and off mode energy use test procedures for the covered product, if a separate test is technically feasible. (42 U.S.C. 6295(gg)(2)(A)(i)) Any such amendment must consider the most current versions of the International Electrotechnical Commission (“IEC”) Standard 62301<sup>5</sup> and IEC Standard 62087<sup>6</sup> as applicable. (42 U.S.C. 6295(gg)(2)(A))

DOE is publishing this final rule in accordance with the statutory authority in EPCA.

#### B. Background

DOE has not previously conducted a test procedure rulemaking for portable electric spas. DOE published in the **Federal Register** a notice of proposed rulemaking (“NOPR”) on October 18, 2022 (“October 2022 NOPR”). 87 FR 63356. DOE held a public meeting related to this NOPR on November 17, 2022 (hereafter, the “NOPR public meeting”).

DOE received comments in response to the October 2022 NOPR from the interested parties listed in Table I.1.

TABLE I.1—LIST OF COMMENTERS WITH WRITTEN SUBMISSIONS IN RESPONSE TO THE OCTOBER 2022 NOPR

Commenter(s)	Reference in this final rule	Comment No. in the docket	Commenter type
American Association for Laboratory Accreditation .....	A2LA .....	6	Accreditation Body.
Appliance Standards Awareness Project, American Council for an Energy-Efficient Economy, Natural Resources Defense Council, New York State Energy Research and Development Authority, and the Northwest Energy Efficiency Alliance.	Joint Advocates .....	12	Advocacy Organizations.
Bullfrog International .....	Bullfrog .....	11	Manufacturer.

<sup>2</sup> For editorial reasons, upon codification in the U.S. Code, Part B was redesignated Part A.

<sup>3</sup> The enumerated list of covered products is at 42 U.S.C. 6292(a)(1)–(19).

<sup>4</sup> The definition for “household” is found at 10 CFR 430.2.

<sup>5</sup> IEC 62301, *Household electrical appliances—Measurement of standby power* (Edition 2.0, 2011–01).

<sup>6</sup> IEC 62087, *Audio, video and related equipment—Methods of measurement for power consumption* (Edition 1.0, Parts 1–6: 2015, Part 7: 2018).

TABLE I.1—LIST OF COMMENTERS WITH WRITTEN SUBMISSIONS IN RESPONSE TO THE OCTOBER 2022 NOPR—Continued

Commenter(s)	Reference in this final rule	Comment No. in the docket	Commenter type
California Energy Commission .....	CEC .....	13	State Government Agency.
Jacuzzi Group (Sundance Spas, Jacuzzi Hot Tubs, Dimension One Spas, ThermoSpas).	Jacuzzi Group .....	9	Manufacturer.
Master Spas .....	Master Spas .....	7	Manufacturer.
Pacific Gas and Electric Company, San Diego Gas & Electric, and Southern California Edison; collectively, the California Investor-Owned Utilities.	CA IOUs .....	8	Utilities.
Pool & Hot Tub Alliance, International Hot Tub Association ....	PHTA/IHTA .....	10	Trade Associations.
Texas A&M Master of Public Service & Administration students: Rachel Trusler, Madeline Luster, and Taylor Rapp.	Texas A&M Students .....	4	Individuals.
Watkins Wellness .....	Watkins .....	14	Manufacturer.

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.<sup>7</sup> To the extent that interested parties have provided written comments that are substantively consistent with any oral comments provided during the NOPR public meeting, DOE cites the written comments throughout this final rule. DOE did not identify any oral comments provided during the NOPR public meeting that are not substantively addressed by written comments.

## II. Synopsis of the Final Rule

In this final rule, DOE is establishing a test procedure for measuring the energy use of portable electric spas in a new appendix GG to subpart B of part 430 of title 10 of the Code of Federal Regulations (“CFR”) (“appendix GG”). DOE is incorporating the applicable industry test method published by the Pool & Hot Tub Alliance (“PHTA”)<sup>8</sup> in partnership with the International Code Council (“ICC”) and approved by the American National Standards Institute (“ANSI”) in ANSI/APSP/ICC–14 2019, “American National Standard for Portable Electric Spa Energy Efficiency” (“ANSI/APSP/ICC–14 2019”), with certain exceptions and additions. The test method produces a measure of the energy consumption of portable electric spas that represents the average power consumed by the spa, normalized to a standard temperature difference

between the ambient air and the water in the spa, while the cover is on and the product is operating in its default operation mode. As discussed further in section III.C.3 of this final rule, DOE is referring to this power use metric as “standby loss.”

DOE reviewed the relevant sections of ANSI/APSP/ICC–14 2019 and has determined that ANSI/APSP/ICC–14 2019, in conjunction with the additional test methods and calculations adopted in appendix GG, produces test results that reflect the energy efficiency, energy use, or estimated operating costs of a portable electric spa during a representative average use cycle. (42 U.S.C. 6293(b)(3))

DOE also reviewed the burdens associated with conducting the portable electric spa test procedure adopted in this final rule and based on the results of such analysis, has determined that the test procedure would not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) DOE’s analysis of the burdens associated with the test procedure is presented in section III.F of this document.

This final rule also adopts definitions for certain categories of portable electric spas in appendix GG and establishes requirements regarding the sampling plan and representations for portable electric spas in 10 CFR part 429.

The effective date for the test procedure adopted in this final rule is 30 days after publication of this document in the **Federal Register**. Representations of energy use or energy efficiency must be based on testing in accordance with the test procedure beginning on the compliance date of any energy conservation standards for portable electric spas.

## III. Discussion

In the following sections, DOE discusses each topic considered regarding the portable electric spa test procedure. For each discussion topic,

DOE provides relevant background information, summarizes the proposal from the October 2022 NOPR, summarizes stakeholder comments received, responds to those comments, and provides justification for the finalized test provisions adopted by this final rule.

### A. General Comments

DOE received general comments in response to the October 2022 NOPR that are relevant to establishing a test procedure for portable electric spas.

PHTA/IHTA, the Jacuzzi Group, and Bullfrog encouraged DOE to move forward with both a test procedure and an energy conservation standard rule based on ANSI/APSP/ICC–14 2019. (PHTA/IHTA, No. 10 at p. 2; Jacuzzi Group, No. 9; Bullfrog, No. 11 at p. 1) A2LA, the CA IOUs, and the CEC generally supported the inclusion of ANSI/APSP/ICC–14 2019 in the proposed test procedure. (A2LA, No. 6 at p. 1; CA IOUs, No. 8 at p. 1; CEC, No. 13 at p. 2) The Texas A&M Students and the Joint Advocates expressed support for DOE advancing the rulemaking for portable electric spas. (Texas A&M Students, No. 4 at p. 2; Joint Advocates, No. 12 at p. 1) And Master Spas, Jacuzzi Group, and Bullfrog all supported the written responses from PHTA/IHTA. (Master Spas, No. 7 at p. 1; Jacuzzi Group, No. 9; Bullfrog, No. 11 at p. 1)

As discussed in the following sections, DOE is adopting a test procedure that is based on ANSI/APSP/ICC–14 2019 with certain additions and modifications.

Additionally, PHTA/IHTA commented that DOE may want to consider whether anything in the proposed DOE test procedure or future energy conservation standards could force manufacturers to insulate portable electric spas to such an extreme that portable electric spas overheat during hot weather. (PHTA/IHTA, No. 10 at p. 19) PHTA/IHTA explained that

<sup>7</sup> The parenthetical reference provides a reference for information located in the docket of DOE’s rulemaking to develop test procedures for portable electric spas (Docket No. EERE–2022–BT–TP–0024, which is maintained at [www.regulations.gov](http://www.regulations.gov)). The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

<sup>8</sup> The PHTA is the result of a 2019 merger between the Association of Pool and Spa Professionals (“APSP”) and the National Swimming Pool Foundation (“NSPF”). The reference to APSP has been retained in the ANSI designation of ANSI/APSP/ICC–14 2019.

customer service departments receive calls from owners wanting to know how to cool off their portable electric spa, saying it is overheating from excess heat retention in warm climates. (*Id.*) PHTA/IHTA indicated that this can be a safety concern, and that it could happen more frequently with global warming and increasingly higher temperatures. (*Id.*) PHTA/IHTA questioned whether there is a tipping point between hot ambient temperatures versus energy savings on heat in cold climates in colder months that should be considered both in the proposed test procedure as well as a future energy conservation standard. (*Id.*) PHTA/IHTA stated that they looked forward to providing any needed data, testing, or analysis to DOE. (*Id.*)

In response, DOE notes that there is nothing in this test procedure final rule that will force manufacturers to change the amount that they insulate portable electric spas because the test procedure specifies only the method to measure energy performance and does not specify any required levels of energy performance. Required levels of energy performance would be considered in a separate energy conservation standard rulemaking, and DOE encourages PHTA/IHTA to provide comments on the topic of overheating to that rulemaking if PHTA/IHTA is concerned about portable electric spa overheating at that time.

## B. Scope and Definitions

### 1. Scope of DOE Test Procedure

As part of the October 2022 NOPR, DOE reviewed the applicable industry test procedure ANSI/APSP/ICC-14 2019,<sup>9</sup> which provides recommended minimum guidelines for testing the energy efficiency of factory-built residential portable electric spas. The standard methods included in ANSI/APSP/ICC-14 2019 provide a means to compare and evaluate the energy efficiency of different types of portable electric spas in conditions relevant to product use. Section 3 of ANSI/APSP/ICC-14 2019 defines “portable electric spa” as “a factory-built electric spa or hot tub, supplied with equipment for heating and circulating water at the time of sale or sold separately for subsequent attachment.” This ANSI/APSP/ICC-14 2019 definition is identical to the definition used by the CEC and adopted by DOE in the September 2022 Final Determination. 87 FR 54123, 54125. Section 3 of ANSI/APSP/ICC-14 2019 also defines certain categories of

portable electric spas, as discussed in section III.B.2 of this final rule.

In the October 2022 NOPR, DOE tentatively concluded that all products on the market can be tested using methods consistent with or similar to those in ANSI/APSP/ICC-14 2019. 87 FR 63356, 63359. DOE proposed that the scope of the test procedure include all products meeting the definition of “portable electric spa” in 10 CFR 430.2. *Id.*

DOE requested comment on its proposal for the scope of the test procedure to include all products that meet the definition of “portable electric spa.” *Id.* Additionally, DOE requested comment on whether any additional products should be included within the scope of the DOE test procedure and whether any products that meet the definition of “portable electric spa” should be excluded from the scope of the DOE test procedure, and if so, on what basis. *Id.*

The CEC commented in support of the scope and definitions proposed by DOE in the October 2022 NOPR. (CEC, No. 13 at p. 2)

PHTA/IHTA supported the inclusion of all products meeting the definition of portable electric spa within the scope of the test procedure. (PHTA/IHTA, No. 10 at p. 9) PHTA/IHTA also commented that sensory deprivation and cold/ice bath products could unintentionally fall under the proposed scope and that DOE could consider clarifying that these products are excluded from the scope. (*Id.*) PHTA/IHTA stated that although sensory deprivation and cold/ice bath products are similar to portable electric spas in some ways, they are very different in other ways and are not compatible with the current or proposed portable electric spa test procedures. (*Id.*) PHTA/IHTA noted that cold/ice bath products are not always supplied with heating functions. (PHTA/IHTA, No. 10 at p. 10)

In response to PHTA/IHTA’s recommendation to clarify the exclusion of sensory deprivation and cold/ice bath products from the scope of the test procedure, DOE has reviewed products on the market that appear to fit the description of these categories. Many of the models that DOE reviewed heat and circulate water. To the extent that such a product is supplied with equipment for heating and circulating water at the time of sale or sold separately for subsequent attachment, such a product would meet the definition of a portable electric spa. PHTA/IHTA also did not specify what product characteristics would differentiate sensory deprivation and cold/ice bath products that meet the portable electric spa definition from

other types of portable electric spas. As a result, in this final rule, DOE is not categorically excluding these products from the scope of the portable electric spa test procedure.

However, DOE notes that it may consider sensory deprivation and cold/ice bath products when evaluating potential energy conservation standards. To the extent that these products have significantly different design, operation, and efficiency characteristics as compared to other portable electric spas, DOE may consider whether separate treatment is appropriate. Any consideration of potential energy conservation standards for separate categories of portable electric spas would be addressed in a separate rulemaking. Further, as discussed in section III.F of this document, manufacturers are not required to test the subject portable electric spas in accordance with this test method until such time as compliance is required with any future applicable energy conservation standards.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is finalizing the scope of coverage to include all products that meet the definition of “portable electric spa.”

### 2. Definitions of Categories of Portable Electric Spas

Section 3 of ANSI/APSP/ICC-14 2019 defines the following categories of portable electric spas:

(1) *Standard Spa*: A portable electric spa that is not an inflatable spa, an exercise spa, or the exercise spa portion of a combination spa.

(2) *Exercise Spa* (also known as a swim spa): A variant of a portable electric spa in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place.

(3) *Combination Spa*: A portable electric spa with two separate and distinct reservoirs, where (a) one reservoir is an exercise spa; (b) the second reservoir is a standard spa; and (c) each reservoir has an independent water temperature setting control.

(4) *Inflatable Spa*: A portable electric spa where the structure is collapsible and designed to be filled with air to form the body of the spa.

These categories of portable electric spas defined in ANSI/APSP/ICC-14 2019 differ in the way they are tested and in the allowed energy consumption specified in ANSI/APSP/ICC-14 2019. Based on DOE’s review of the portable electric spa market, DOE tentatively

<sup>9</sup> ANSI/APSP/ICC-14 2019 is available at [webstore.ansi.org/standards/apsp/ansiapspicc142019](http://webstore.ansi.org/standards/apsp/ansiapspicc142019).

determined in the October 2022 NOPR that the category definitions defined in ANSI/APSP/ICC–14 2019 accurately categorize the products available on the market. 87 FR 63356, 63360. DOE proposed to include definitions for “standard spa,” “exercise spa,” “combination spa,” and “inflatable spa” in section 2 of appendix GG that are generally consistent with those category definitions in ANSI/APSP/ICC–14 2019.<sup>10</sup> *Id.* For all definitions other than “exercise spa,” DOE proposed a definition identical to the wording in ANSI/APSP/ICC–14 2019. *Id.* For “exercise spa,” DOE proposed to include only the first paragraph of the definition from ANSI/APSP/ICC–14 2019 because the second paragraph<sup>11</sup> of the definition is informative, describing examples of products that may be included within the definition. *Id.*

DOE requested comment on whether the definitions for the categories of portable spas proposed in section 2 of appendix GG (*i.e.*, “standard spa,” “exercise spa,” “combination spa,” and “inflatable spa”) adequately delineate the categories of portable electric spas and whether any additional or different categories are warranted. *Id.*

In response to the October 2022 NOPR, the CA IOUs commented that, based on their market research, the current proposed definitions cover all products labeled as portable electric spas. (CA IOUs, No. 8 at p. 2) The CA IOUs stated that the current categories adequately delineate the portable electric spa market and that the terms are well understood by advocates, industry, and regulators. (*Id.*)

The CEC commented in support of the proposed definitions for standard spa, exercise spa, combination spa, and inflatable spa. (CEC, No. 13 at p. 2) The CEC noted that the proposed scope and definitions would align with ANSI/APSP/ICC–14 2019 and with California’s Code of Regulations and would maintain consistency with several States that have adopted ANSI/

APSP/ICC–14 2019 or that reference California’s regulations. (*Id.*)

PHTA/IHTA commented that, while they support DOE’s proposed definitions of “standard spa,” “combination spa,” and “inflatable spa,” they recommend also adopting the second paragraph of the definition of “exercise spa” in ANSI/APSP/ICC–14 2019. (PHTA/IHTA, No. 10 at p. 10) PHTA/IHTA explained that, although the second paragraph is descriptive, it actually defines the product because the first sentence separates an exercise spa from a standard spa, while the second sentence separates an exercise spa from a pool. (*Id.*) PHTA/IHTA stated that this additional description under the definition of “exercise spa” was created in response to multiple incidents of misclassification in order to prevent future misclassifications. (*Id.*) PHTA/IHTA expressed concern that eliminating the second paragraph from the definition in the DOE test procedure could imply that this classification is no longer accurate, thereby causing misclassifications and misapplications of DOE’s regulations. (*Id.*)

In response to PHTA/IHTA’s comment regarding the definition of “exercise spa,” DOE notes that the second paragraph of the definition as written in ANSI/APSP/ICC–14 2019 does not actually distinguish exercise spas from either standard spas or pools. The first sentence of the second paragraph lists potential features of exercise spas, including peripheral jetted seats, a heater, and a filtration and circulation system, all of which are also characteristic of standard spas. As a result, this sentence does not actually separate exercise spas from standard spas, as stated in PHTA/IHTA’s comment. The first sentence also says that an exercise spa “may be a separate distinct portion of a combination spa and may have separate controls,” but this phrase does not add descriptive detail beyond what is included in DOE’s proposed definition for “combination spa.” The second sentence states that an exercise spa holds an unobstructed volume of water sufficiently large for a 99th percentile man to swim in place. PHTA/IHTA’s comment states that this sentence distinguishes exercise spas from pools. However, as a lower bound on volume, the requirement to fit a 99th percentile man does not actually distinguish exercise spas from larger pools. Finally, DOE notes that the CEC regulations use a definition for “exercise spa” that is similar to DOE’s proposed definition and does not include the second paragraph of the definition as

stated in ANSI/APSP/ICC–14 2019.<sup>12</sup> Because a similar definition is used already as the basis of State coverage for portable electric spas, DOE concludes its own proposed single paragraph definition would not cause confusion among manufacturers or test labs.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is establishing definitions for categories of portable electric spas that are identical to those in the proposed appendix GG.

### 3. Therapeutic Spas

Section 1.3 of ANSI/APSP/ICC–14 2019 states that spas operated for medical treatment or physical therapy, among other types,<sup>13</sup> are not included within the scope of ANSI/APSP/ICC–14 2019. However, DOE noted in the October 2022 NOPR that the definition of “exercise spa” in section 3 of ANSI/APSP/ICC–14 2019 indicates that exercise spas may include peripheral jetted seats intended for water therapy. 87 FR 63324, 63360. DOE discussed in the October 2022 NOPR that it had reviewed the market and found that “therapeutic,” “water therapy,” or “hydrotherapy” applications are frequently advertised in marketing materials for many portable electric spas, including many models that do not appear to have features that are different than those found on models that do not mention therapeutic applications in their marketing materials. *Id.*

In the October 2022 NOPR, DOE stated its presumption that the types of spas operated for medical treatment or physical therapy intended to be referenced by section 1.3 of ANSI/APSP/ICC–14 2019 would not be portable and, therefore, would not be considered a *portable* electric spa (emphasis added). *Id.* DOE noted in the October 2022 NOPR that, to the extent that any of the categories of spas referenced by section 1.3 of ANSI/APSP/ICC–14 2019 do not meet the definition of a portable electric spa, such products would not be within the scope of the test procedure. *Id.*

<sup>12</sup> The CEC defines exercise spas as follows: “Exercise spa’ (also known as a ‘swim spa’) means a portable electric spa that includes specific features and equipment to produce water flow for water physical therapy or physical fitness activity, including, but not limited to, swimming in place.” See section 1602(g)(2) of Article 4 of Division 2 of Title 20 of the California Code of Regulations.

<sup>13</sup> Section 1.3 of ANSI/APSP/ICC–14 2019 states the following: These requirements do not apply to public spas (ANSI/APSP–2), permanently installed or inground spas (ANSI/APSP/ICC–3), or other spas, such as those operated for medical treatment, physical therapy, or other purposes.

<sup>10</sup> Section numbers in appendix GG as proposed in the October 2022 NOPR were one whole number lower than the corresponding section numbers in appendix GG as finalized in this final rule. This final rule uses the section numbering as finalized in this final rule in all discussion of appendix GG to avoid potential confusion.

<sup>11</sup> The second paragraph of the definition of “exercise spa” in ANSI/APSP/ICC–14 2019 states the following: Exercise spas may include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or may be a separate distinct portion of a combination spa and may have separate controls. These aquatic vessels are of a design and size such that it has an unobstructed volume of water large enough to allow the 99th Percentile Man as specified in ANSI/APSP/ICC–16 to swim or exercise in place.

DOE requested comment on whether there are portable electric spas used for special purposes, such as those operated for medical treatment or physical therapy, that should be excluded from the scope of the proposed test procedure or tested in a different manner. *Id.* If so, DOE requested comment on the method to determine the spas to exclude or test differently. *Id.*

In response to the October 2022 NOPR, PHTA/IHTA stated that both portable electric spas and in-ground spas can be used for medical treatment or physical therapy, however in-ground spas are outside of the scope of this rulemaking. (PHTA/IHTA, No. 10 at p. 10) PHTA/IHTA noted they are not aware of any method to exclude or test differently portable electric spas that are used for medical treatment, physical therapy, or other special purposes. (*Id.*)

The CEC commented that spas intended for medical treatment or physical therapy would not be portable and, therefore, would not be considered portable electric spas. (CEC, No. 13 at p. 2) The CEC also indicated that it has not received inquiries regarding spas intended for medical treatment or physical therapy that would pose an issue in defining the scope. (*Id.*)

The Texas A&M Students commented that medical spas should still be subject to the same testing requirements as all other portable electric spas, because there is little distinction between what is and is not a medical spa and most medical spas are from the same manufacturers as recreational ones are but are simply sold and marketed on medical websites. (Texas A&M Students, No. 4 at p. 1)

Based on the comments received and DOE's review of the portable electric spa market, DOE has determined that there is no need to explicitly exclude any products used for special purposes—such as those for therapeutic purposes—that meet the definition of portable electric spa from the scope of the Federal test procedure.

Therefore, for the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, DOE is finalizing the scope as proposed in the October 2022 NOPR and not adopting any specific exclusion for products that meet the definition of portable electric spa and are intended for special purposes, such as those for therapeutic purposes, in this final rule.

#### 4. Portable Electric Spa Size

ANSI/APSP/ICC-14 2019 does not specify any minimum or maximum size of portable electric spas to limit the scope of ANSI/APSP/ICC-14 2019.

Based on DOE's tentative conclusion that all portable electric spas on the market can be tested using methods consistent with or similar to those in ANSI/APSP/ICC-14 2019, DOE tentatively concluded in the October 2022 NOPR that there is no need to limit the scope of the DOE test procedure based on the size of the portable electric spa. 87 FR 63356, 63360. Therefore, DOE did not propose to specify any minimum or maximum size to limit the scope of the proposed test procedure. *Id.*

DOE requested comment on its tentative determination not to propose a minimum or maximum size to limit the scope of the proposed test procedure. *Id.*

In response to the October 2022 NOPR, the CEC and PHTA/IHTA supported DOE's tentative determination not to propose a minimum or maximum size for portable electric spas in the scope of the test procedure. (CEC, No. 13 at p. 2; PHTA/IHTA, No. 10 at p. 10)

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, DOE is not specifying any minimum or maximum size to limit the scope of the portable electric spa test procedure in this final rule.

#### C. Energy Consumption Metric

##### 1. Background

As discussed previously in this document, EPCA requires that any test procedures prescribed or amended must be reasonably designed to produce test results which reflect energy efficiency, energy use, or estimated annual operating cost of a given type of covered product during a representative average use cycle, and that test procedures not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, EPCA requires that DOE amend its test procedures for all covered products to integrate measures of standby mode and off mode energy consumption into the overall energy efficiency, energy consumption, or other energy descriptor, taking into consideration the most current versions of IEC Standards 62301 and 62087, unless the current test procedure already fully accounts for and incorporates the standby mode and off mode energy consumption. (42 U.S.C. 6295(gg)(2)(A)) If an integrated test procedure is technically infeasible, DOE must prescribe a separate standby mode and off mode energy use test procedure for the covered product, if technically feasible. (42 U.S.C. 6295(gg)(2)(A)(ii))

EPCA defines three different modes of operation in 42 U.S.C. 6295(gg)(1)(A). “Active mode” means the condition in

which an energy-using product is connected to a main power source, has been activated, and provides one or more main functions. “Standby mode” means the condition in which an energy-using product is connected to a main power source and offers one or more of the following user-oriented or protective functions: (a) to facilitate the activation or deactivation of other functions (including active mode) by remote switch (including remote control), internal sensor, or timer; or (b) continuous functions, including information or status displays (including clocks) or sensor-based functions. “Off mode” means the condition in which an energy-using product is connected to a main power source and is not providing any standby or active mode function. (42 U.S.C. 6295(gg)(1)(A)(i)–(iii))

##### 2. Modes of Use

Based on market research performed by DOE and analysis from the CEC,<sup>14</sup> portable electric spas are typically connected to a main power source and activated, and provide one or more main functions 24 hours a day, 365 days per year. Although a portable electric spa is typically used for a small number of hours throughout the year, heating the water from ambient temperature to the use temperature takes a long time, and the water must be filtered regularly to keep it fresh. Therefore, most users maintain the spa at their preferred use temperature at all times with periodic or continuous water filtration, even when not in use.<sup>15</sup>

In the October 2022 NOPR, DOE tentatively concluded that all operational modes for portable electric spas would be considered “active modes” as defined in 42 U.S.C. 6295(gg)(1)(A)(i). 87 FR 63356, 63361. As such, portable electric spas would be considered to operate in active mode at all times, and standby mode and off mode, as defined by EPCA, would not be applicable to portable electric spas. *Id.* Therefore, DOE tentatively concluded that there is no standby mode or off mode energy consumption that can be accounted for or incorporated into the proposed DOE test procedure. *Id.*

DOE requested comment on whether it is necessary to measure standby or off

<sup>14</sup> California Energy Commission Final Staff Report—Analysis of Efficiency Standards and Marking for Spas, 2018 Appliance Efficiency Rulemaking for Spas (Docket No. 18-AAER-02, TN No. 222413). Available at [efiling.energy.ca.gov/GetDocument.aspx?tn=222413&DocumentContentId=31256](https://efiling.energy.ca.gov/GetDocument.aspx?tn=222413&DocumentContentId=31256).

<sup>15</sup> *Ibid.*

mode energy consumption in the test procedure. *Id.*

PHTA/IHTA supported DOE's tentative determination that portable electric spas are in active mode at all times. (PHTA/IHTA, No. 10 at p. 10) Additionally, PHTA/IHTA stated they would have no objection to replacing the industry term "standby mode" in ANSI/APSP/ICC-14 2019 with the EPCA-defined term "active mode." (PHTA/IHTA, No. 10 at p. 11)

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, DOE concludes that standby mode and off mode, as defined by EPCA, are not applicable to portable electric spas and that there is no standby mode or off mode energy consumption that can be accounted for or incorporated into the proposed DOE test procedure. Accordingly, this final rule does not include provisions for measuring standby mode or off mode.

### 3. Metric for Active Mode Energy Consumption

ANSI/APSP/ICC-14 2019 includes a method for measuring the energy consumption of portable electric spas while the cover is on and the spa is operating in its default operation mode. The metric used by ANSI/APSP/ICC-14 2019 is normalized standby power, which is the average power consumed by the portable electric spa while the cover is on and the spa is operating in its default operation mode, normalized to a standard temperature difference between the ambient air and the water in the spa.<sup>16</sup> Normalized standby power is the metric used by the CEC and other States that use ANSI/APSP/ICC-14 2019 as the basis for their efficiency programs. It is also the metric used by CSA test method CSA C374:11 (R2021),<sup>17</sup> "Energy performance of hot tubs and spas" ("CSA C374:11 (R2021)"), which is a method used for testing portable electric spas in Canada.

According to analyses from the CEC,<sup>18</sup> the mode of operation measured in ANSI/APSP/ICC-14 2019 represents approximately 75 percent of the energy

consumed by a portable electric spa. DOE estimates that this percentage may be approximately 95 percent in some cases, based on investigative testing that DOE performed and data on typical spa usage from PKData.<sup>19</sup> Taken together, the two estimates indicate the mode of operation measured in ANSI/APSP/ICC-14 2019 represents the largest portion of active mode energy consumption by far. Based on these data sources, DOE tentatively determined in the October 2022 NOPR that the most representative average use cycle or period of use of a portable electric spa is with the spa cover on (*i.e.*, with no consumers in the spa), and with the spa continually or periodically filtering and heating the water in the spa, such that the spa is always ready for use. 87 FR 63356, 63361. DOE indicated in the October 2022 NOPR that it was not aware of any existing test methods that measure the energy consumption in any other parts of active mode described in section III.C.2 of the October 2022 NOPR. *Id.* DOE also indicated that it has been unable to determine any representative durations for these portions of active mode use. *Id.*

Based on these considerations, DOE proposed to use normalized standby power from ANSI/APSP/ICC-14 2019 as the performance-based metric for representing the energy use of portable electric spas. *Id.* DOE further proposed to refer to this metric as "standby loss," rather than "normalized standby power," to avoid misinterpretation with the statutory definition of "standby mode" as defined in 42 U.S.C. 6295(gg)(1)(A)(iii). *Id.*<sup>20</sup> DOE also proposed to define the term "standby loss" in section 2.9 of appendix GG as "the mean normalized power required to operate the portable electric spa in default operation mode with the cover on, as calculated in section 3.3 of this appendix." *Id.*

DOE requested comment on its proposal to use standby loss, equivalent to the normalized standby power as defined by ANSI/APSP/ICC-14 2019, as the performance-based metric for representing the energy use of portable

electric spas, and on its proposed definition for "standby loss" in section 2.9 of appendix GG. *Id.* DOE also requested comment on data regarding the representative operation of spas when in use with the cover removed, including typical frequency and duration of use, operation of jets or other features, and number of users, and on how usage varies across spa types. *Id.* Lastly, DOE requested comment on any test methods that measure the operation of spas when in use with the cover removed. *Id.*

PHTA/IHTA commented in support of DOE's proposal to use normalized standby power from ANSI/APSP/ICC-14 2019 as the performance-based metric for representing the energy use of portable electric spas. (PHTA/IHTA, No. 10 at p. 11) PHTA/IHTA also supported referring to this metric as "standby loss" instead of "normalized standby power" due to concerns of misinterpretation with other statutory definitions. (*Id.*) PHTA/IHTA noted that they were not aware of data analysis existing on typical portable electric spa usage, but rather only anecdotal accounts that suggest a wide range of usage. (*Id.*) PHTA/IHTA also stated that they were not aware of test methods measuring the operation of spas when being used with the cover removed. (*Id.*)

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting the definition of "standby loss" in section 2.9 of appendix GG as "the mean normalized power required to operate the portable electric spa in default operation mode with the cover on, as calculated in section 3.3 of this appendix" and establishing "standby loss" as the performance-based metric for representing energy usage of portable electric spas.

### D. Test Method

#### 1. Referenced Industry Test Method

As discussed previously in this document, ANSI/APSP/ICC-14 2019 contains a test method for measuring the standby loss<sup>21</sup> of portable electric spas. ANSI/APSP/ICC-14 2019 measures standby loss as the average power required to maintain the spa's water at a ready-to-use temperature over a period of at least 72 hours, while the spa

<sup>16</sup> Section 5.1 of ANSI/APSP/ICC-14 2019 specifies that the purpose of ANSI/APSP/ICC-14 2019 is to measure the energy consumption in "standby mode." This use of "standby mode" is not consistent with the term as defined by EPCA but rather refers to a type of active mode as defined by EPCA, as explained in section III.C.2 of this final rule.

<sup>17</sup> CSA 374:11 (R2021) is available at [www.csagroup.org/store/product/2703317/](http://www.csagroup.org/store/product/2703317/).

<sup>18</sup> California Energy Commission Final Staff Report—Analysis of Efficiency Standards and Marking for Spas, 2018 Appliance Efficiency Rulemaking for Spas (Docket No. 18-AAER-02, TN No. 222413). Available at [efiling.energy.ca.gov/GetDocument.aspx?tn=222413&DocumentContentId=31256](http://efiling.energy.ca.gov/GetDocument.aspx?tn=222413&DocumentContentId=31256).

<sup>19</sup> P.K. Data Inc. 2022 Hot Tub Market Data: Custom Compilation for Lawrence Berkeley National Laboratory (through 2021). 2022. Alpharetta, GA. Available at [www.pkdata.com/reports-store.html](http://www.pkdata.com/reports-store.html) (Last accessed April 24, 2023).

<sup>20</sup> DOE noted in the October 2022 NOPR that the term "standby loss" has been used previously to describe the energy use of a water heater associated with maintaining water temperature (*See* sections 1.13 and 6.3.3 of appendix E to subpart B of 10 CFR part 430). A portable electric spa is similar to a water heater in that regard, because both products consume energy to maintain their contents at a specified temperature over a long period of time.

<sup>21</sup> As discussed in section III.C.3 of this document, ANSI/APSP/ICC-14 2019 uses the term "normalized standby power" to refer to the metric that DOE is referring to as "standby loss." To avoid confusion about multiple terms, the term "standby loss" is used throughout section III.D of this final rule to refer to "normalized standby power" in ANSI/APSP/ICC-14 2019.



remains covered in a controlled-temperature environment.

In the October 2022 NOPR, DOE discussed that it had reviewed ANSI/APSP/ICC–14 2019 and tentatively concluded that it is reasonably designed to produce test results to determine the energy use of portable electric spas during a representative average use cycle or period of use. 87 FR 63356, 63362.

In the October 2022 NOPR, DOE proposed to adopt specific sections of ANSI/APSP/ICC–14 2019 in its test procedure for portable electric spas, along with modifications and additions that DOE determined would improve repeatability and representativeness of test results. *Id.* DOE requested comment on its proposal. *Id.*

PHTA/IHTA, the CEC, and the CA IOUs commented in support of DOE adopting specific sections of ANSI/APSP/ICC–14 2019. (PHTA/IHTA, No. 10 at p. 11; CEC, No. 13 at p. 3; CA IOUs, No. 8 at p. 1)

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting specific sections of ANSI/APSP/ICC–14 2019 in its test procedure for portable electric spas. Specific modifications, additions, and exceptions are discussed in sections III.D.2 through III.D.11 of this final rule.

## 2. Excluded Sections of ANSI/APSP/ICC–14 2019

In the October 2022 NOPR, DOE proposed to exclude the following sections, subsections, and appendices of ANSI/APSP/ICC–14 2019 from DOE's test procedure:

- Sections 1, 2, 4, 6, and 7 in their entirety;
- Section 3 definitions for “cover, specified,” “fill volume,” “rated volume,” and “standby mode”;
- Subsections 5.1, 5.2, 5.5.2, 5.5.4, 5.5.5, and 5.7;
- Appendix A subsection “Chamber floor”; and
- Appendices B, C, and D.

87 FR 63356, 63362–63363.

DOE explained the rationale for each proposed exclusion in the October 2022 NOPR and requested comment on whether any of the sections of ANSI/APSP/ICC–14 2019 that DOE proposed to exclude should be included in the DOE test procedure. *Id.*

The CEC commented in support of excluding sections 1 and 2 of ANSI/APSP/ICC–14 2019 from the test procedure. (CEC, No. 13 at pp. 2–3)

PHTA/IHTA supported DOE's proposed exclusion of some sections of ANSI/APSP/ICC–14 2019 that are not appropriate for the Federal test

procedure, but they expressed concern with excluding or changing the ambient temperature, normalization formula, and chamber floor requirements of ANSI/APSP/ICC–14 2019. (PHTA/IHTA, No. 10 at p. 12) DOE addresses these specific areas of concern identified by PHTA/IHTA in sections III.D.3 and III.D.4.b of this final rule.

Watkins commented generally in support of the PHTA/IHTA comments. (Watkins, No. 14 at p. 1) Watkins also commented specifically that the proposed changes that deviate from ANSI/APSP/ICC–14 2019 would induce significant financial burden to manufacturers, create supply chain disruptions, and create a shortage of certified third-party laboratories. Watkins encouraged DOE to align as closely as possible with ANSI/APSP/ICC–14 2019. (*Id.* at p. 2)

A2LA commented that sections 4.1 and 4.2 of ANSI/APSP/ICC–14 2019 should be included,<sup>22</sup> as accreditation of testing laboratories allows DOE to trust the validity of test results and ensures technical competency across testing laboratories and certification bodies. (A2LA, No. 6 at pp. 1–2)

In response to the concerns expressed by Watkins, DOE has aligned its finalized test procedure with ANSI/APSP/ICC–14 2019 to the greatest extent possible consistent with its obligations under EPCA to design test procedures that measure the energy use of a portable electric spa during a representative average use cycle or period of use without being unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) Where DOE has deviated from the provisions of ANSI/APSP/ICC–14 2019, DOE discusses throughout this final rule why such deviations are necessary to fulfill these statutory requirements. DOE has reviewed the burdens associated with conducting the portable electric spa test procedure adopted in this final rule. Based on the results of such analysis, DOE has determined that the test procedure would not be unduly burdensome to conduct. DOE's analysis of the burdens associated with the test procedure is presented in section III.F of this document. Accordingly, DOE does not expect the test procedure adopted in this final rule to adversely affect the availability of certified third-party laboratories to perform testing

<sup>22</sup> Section 4.1 of ANSI/APSP/ICC–14 2019 requires that all certification bodies shall be accredited to ISO/IEC 17065. Section 4.2 of ANSI/APSP/ICC–14 2019 requires that all testing laboratories shall be qualified by a certification body or accredited by an accreditation body who is a member of the International Laboratory Accreditation Cooperation (“ILAC”).

consistent with the finalized test procedure. DOE also does not expect the test procedure adopted in this final rule to create any supply chain disruptions, as suggested by Watkins. As discussed in section III.G of this final rule, there is no need to perform testing according to the DOE test procedure until the compliance date of any future Federal energy conservation standards, were DOE to establish energy conservation standards. This compliance date leaves at least several years for all testing to be completed, which DOE expects to be an adequate duration to ensure that any needed testing will not create supply chain disruptions.

In response to the comment from A2LA, DOE's experience in conducting testing according to ANSI/APSP/ICC–14 2019 and to the DOE test procedure as finalized in this final rule demonstrates that the finalized DOE test procedure adequately outlines the details required to perform the test. As a result, the accreditation as specified in section 4.2 of ANSI/APSP/ICC–14 2019 is not necessary to achieve repeatable, reproducible, and representative test results from DOE's test procedure for portable electric spas. In addition, accreditation is not sufficient for ensuring a laboratory's test results are accurate because, although accreditation is a tool that can help a laboratory to become and remain technically competent, accreditation alone does not ensure the laboratory performs each test method correctly for each test. On this basis, DOE has concluded that the requirement for a testing laboratory to be qualified by a certification body accredited to ISO/IEC 17065 or accredited by an accreditation body who is a member of ILAC is not necessary for the purposes of conducting the DOE test procedure as finalized. Therefore, in this final rule, DOE is excluding the sections in ANSI/APSP/ICC–14 2019 regarding laboratory qualification from the DOE test procedure.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, DOE is finalizing its proposal to exclude the following sections, subsections, and appendices of ANSI/APSP/ICC–14 2019 from DOE's portable electric spa test procedure:

- Sections 1, 2, 4, 6, and 7 in their entirety;
- Section 3 definitions for “cover, specified,” “fill volume,” “rated volume,” and “standby mode”;
- Subsections 5.1, 5.2, 5.5.2, 5.5.4, 5.5.5, and 5.7;
- Appendix A subsection “Chamber floor”; and
- Appendices B, C, and D.



### 3. Ambient Air Temperature

As part of the October 2022 NOPR, DOE reviewed the ambient air temperature requirements specified in several existing or past test procedures for portable electric spas.

Section 5.5.4 of ANSI/APSP/ICC–14 2019 specifies that the ambient air temperature shall be a maximum of 63 °F for the duration of the test. This approach to specifying ambient air temperature (*i.e.*, in which a maximum temperature, rather than a target temperature, is specified) is used in conjunction with a normalization approach to determine a normalized standby loss value. Section 5.7.2 of ANSI/APSP/ICC–14 2019 specifies that for inflatable spas, standard spas, or the standard spa portion of a combination spa, the measured standby loss is normalized to represent a temperature difference of 37 °F between the average water temperature during the test and the average ambient air temperature during the test. For exercise spas or the exercise spa portion of a combination spa, the measured standby loss is normalized to represent a temperature difference of 22 °F between the average water temperature during the test and the average ambient air temperature during the test.

An earlier version of the CEC portable electric spa test procedure, on which ANSI/APSP/ICC–14 2019 is based, specified an ambient air temperature of 60 °F ± 3 °F.<sup>23</sup> DOE notes that 60 °F is approximately equal to the annual average temperature for all of California.<sup>24</sup>

CSA C374:11 (R2021) specifies a mandatory test with ambient temperature of 44.6 °F ± 1.8 °F (7 °C ± 2 °C), and an optional cold-weather test with ambient temperature of 17.6 °F ± 1.8 °F (– 8 °C ± 2 °C).

DOE noted in the October 2022 NOPR that the DOE test procedure will be used for representations of portable electric spa energy consumption throughout the United States; therefore, the specified ambient air temperature must reflect a nationally representative value. 87 FR 63324, 63363. To determine a nationally representative ambient air temperature that could be applicable to portable electric spas throughout the United States, DOE first determined the average annual air temperature across all states

in the contiguous United States, and then calculated a weighted average across all states, weighted by the estimated number of spas installed in each state.<sup>25</sup> *Id.* DOE used data from the National Oceanic and Atmospheric Administration<sup>26</sup> indicating average temperature in each state for the years 2012–2021, and data from PKData<sup>27</sup> indicating the number of spas installed in each state in 2020. *Id.* This methodology resulted in an average air temperature of 56.1 °F. Rounded to the nearest degree Fahrenheit, DOE tentatively determined in the October 2022 NOPR that 56 °F is a nationally representative ambient air temperature applicable to testing portable electric spas. *Id.*

Accordingly, based on this analysis, DOE proposed in the October 2022 NOPR to specify 56.0 °F as the target ambient air temperature in section 3.2.1 of appendix GG. *Id.* Consistent with the earlier CEC test procedure, DOE also proposed to specify a tolerance of ±3.0 °F on the ambient air temperature during the test. *Id.* DOE tentatively determined in the October 2022 NOPR that specifying an allowable range of temperatures would provide greater assurance of reproducible and representative test results compared to the approach used in ANSI/APSP/ICC–14 2019 of specifying only a maximum ambient air temperature. *Id.* DOE also proposed to specify that this requirement applies to each individual ambient air temperature measurement taken for the duration of the test (*i.e.*, the requirement does not apply to the overall average ambient air temperature during the test). *Id.*

DOE requested comment on its determination that, rounded to the nearest degree, 56 °F is a nationally representative ambient air temperature applicable to testing portable electric spas. *Id.* DOE requested comment on its proposal to specify an ambient temperature of 56.0 ± 3.0 °F during testing. *Id.* If commenters recommend a different ambient temperature, DOE requested data demonstrating the representativeness of that ambient temperature. *Id.*

In response to the October 2023 NOPR, PHTA/IHTA stated that the

ambient temperature in ANSI/APSP/ICC–14 2019 is not meant to be representative of a national average but rather a point of reference to ensure consistency in testing. (PHTA/IHTA, No. 10 at pp. 5, 12) PHTA/IHTA asserted that DOE's proposal to use the national average temperature would not improve testing consistency or yield better results over ANSI/APSP/ICC–14 2019. (*Id.* at p. 5) Further, PHTA/IHTA stated that a 56 °F ambient temperature requirement would require some existing test chambers to be upgraded to full air makeup systems. (*Id.* at p. 5, 12) PHTA/IHTA noted that the current ambient temperature requirement specified in ANSI/APSP/ICC–14 2019 is used for various State programs spanning a diverse range of climates. (*Id.* at p. 5)

With regard to inflatable spas specifically, PHTA/IHTA commented that these products are typically used only during the 6–7 warmest months of the year and stored during the winter months when standby loss energy for other types of portable electric spas would be at its highest. (*Id.*) PHTA/IHTA presented data indicating that the simple (*i.e.*, unweighted by installation volume) average temperature in the 48 contiguous States over the last 12 years for the months April through October was 63.2 °F. (*Id.*) PHTA/IHTA asserted that this average temperature would warrant using the ambient temperature specified in ANSI/APSP/ICC–14 2019 (*i.e.*, maximum of 63 °F) for simplicity and to avoid what PHTA/IHTA characterized as the heavy burden manufacturers would face if having to retest based on DOE's proposed ambient temperature or other temperature that would better reflect the seasonal use for inflatable spas. (*Id.* at pp. 5–6)

PHTA/IHTA also presented data from manufacturer testing comparing the final normalized test results between the testing conducted at 56 °F (corresponding to DOE's proposed ambient air temperature) and testing conducted at 60 °F (corresponding to a higher ambient air temperature allowable by ANSI/APSP/ICC–14 2019). (*Id.* at pp. 4–5) This testing included five portable electric spas collected in four different test chambers. (*Id.* at p. 5) The measured standby loss for each test was normalized to represent a temperature difference of 37 °F between the average water temperature during the test and the average ambient air temperature during the test, as required by ANSI/APSP/ICC–14 2019. (*Id.*) The results of this testing indicated that the difference in final test results between the two ambient air temperatures deviated by an average of 1.4 percent,

<sup>23</sup> See table in p. 5 of the CEC Docket Number 12–AAER–2G, document TN 73027. Available at [efiling.energy.ca.gov/GetDocument.aspx?tn=73027&DocumentContentId=8328](https://efiling.energy.ca.gov/GetDocument.aspx?tn=73027&DocumentContentId=8328).

<sup>24</sup> See climate data from National Oceanic and Atmospheric Administration. Available at: [www.ncei.noaa.gov/cag/statewide/time-series/4/tavg/12/12/2012-2021?base\\_prd=true&begbaseyear=2012&endbaseyear=2021](https://www.ncei.noaa.gov/cag/statewide/time-series/4/tavg/12/12/2012-2021?base_prd=true&begbaseyear=2012&endbaseyear=2021).

<sup>25</sup> DOE used only the contiguous U.S., excluding Alaska and Hawaii, because the data from PKData on the number of spas in each state excluded Alaska and Hawaii.

<sup>26</sup> [www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series](https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series).

<sup>27</sup> P.K. Data Inc. 2022 Hot Tub Market Data: Custom Compilation for Lawrence Berkeley National Laboratory (through 2021). 2022. Alpharetta, GA. Available at [www.pkdata.com/reports-store.html#/](https://www.pkdata.com/reports-store.html#/) (Last accessed April 24, 2023). (2023).

with a maximum deviation for one unit of 2.2 percent. (*Id.* at pp. 5, 12) PHTA/IHTA concluded that these test results demonstrate that it is not necessary to change the ambient temperature or the normalization formula (from what is currently specified in ANSI/APSP/ICC–14 2019), as retesting (according to DOE's proposed requirements) would achieve the same results. (*Id.*)

With regard to DOE's proposal to specify a tolerance of  $\pm 3^\circ\text{F}$  around the target ambient air temperature, PHTA/IHTA commented that some test chambers cannot hold a  $\pm 3^\circ\text{F}$  ambient tolerance without rapid and damaging cycling to the cooling system, which is the reason why ANSI/APSP/ICC–14 2019 no longer specifies a minimum ambient air temperature requirement and uses the normalization approach instead. (*Id.* at pp. 6, 12)

In summary, PHTA/IHTA recommended that DOE reference the ambient temperature requirement of  $63^\circ\text{F}$  or lower (*i.e.*, with no lower boundary) as specified in ANSI/APSP/ICC–14 2019, in lieu of specifying a target temperature with an allowable range of  $\pm 3.0^\circ\text{F}$  during testing. (*Id.* at pp. 6, 12)

Master Spas commented that  $56^\circ\text{F}$  is not representative of all consumers, and that, given the wide range of temperature and climates experienced by portable electric spa consumers, it would be challenging to develop a temperature that it is representative for consumers across different regions. (Master Spas, No. 7 at p. 1) Master Spas stated that changing the ambient air temperature would be burdensome and unnecessary, especially when the results of the temperature change could be calculated without expensive testing. (*Id.*)

The CA IOUs commented that changing the ambient temperature would not affect the standby loss results because of the normalization approach used in the test procedure. (CA IOUs, No. 8 at p. 5) The CA IOUs presented data from the Alberta Research Council that the CA IOUs asserted provides experimental proof of the temperature normalization procedure. (*Id.* at p. 6) As described by the CA IOUs, the study measured eight portable spas at various ambient air and water temperature combinations, and the results demonstrated that when the difference between the ambient air and water temperature was increased by 2.6 times, the power consumption increase was 2.7 times greater. (*Id.*) Thus, the CA IOUs asserted that the temperature normalization method closely predicts energy consumption from experimental results. (*Id.*)

The CA IOUs also suggested that if DOE were to finalize its proposal to specify  $56^\circ\text{F}$  as the target ambient air temperature for testing, products currently certified for State programs could avoid retesting by using normalization to extrapolate new values from those currently reported, and that as products are tested at updated temperatures, such an exemption could be retired after a transition period of one year. (*Id.*)

As discussed earlier in this document, EPCA requires that any test procedures prescribed by DOE be reasonably designed to produce test results that measure energy efficiency, energy use, or estimated annual operating cost of a covered product during a representative average use cycle or period of use, while not being unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) DOE recognizes that no single temperature specification would be representative of all portable electric spa installations throughout the United States. Defining a nationally representative average air temperature for portable electric spas, however, provides a consistent basis of comparison for measured test results among the diversity of portable electric spa models available on the market. DOE has determined that defining a single ambient air condition representing the average annual condition experienced by portable electric spas in the United States, weighted by estimated installation volume, satisfies EPCA's requirements for the test procedure to produce results that measure energy use during a representative average period of use, while not being unduly burdensome to conduct. Based on DOE's analysis of available climate data, and noting that interested parties have not provided other, installation-weighted data with which to determine a nationally representative average air temperature, DOE has determined that  $56^\circ\text{F}$  is a nationally representative ambient air temperature applicable to testing portable electric spas.

As discussed, PHTA/IHTA stated that the ambient temperature in ANSI/APSP/ICC–14 2019 is not meant to be representative of a national average, and that use of a national average temperature would not improve testing consistency or yield better results over ANSI/APSP/ICC–14 2019. (PHTA/IHTA, No. 10 at p. 5) In response, DOE notes that it is true that using a national average temperature will not improve testing consistency between tests in different laboratories or of different models because test results from different laboratories or of different models will be consistent with each

other as long as they all use the same ambient temperature regardless of the ambient temperature set in the test procedure. However, use of a national average ambient temperature will yield better results than the ambient temperature in ANSI/APSP/ICC–14 2019 in that the results will be more representative of the average standby loss of portable electric spas throughout the U.S. than results determined using ANSI/APSP/ICC–14 2019.

Testing with a  $63^\circ\text{F}$  ambient temperature for calculating standby loss in ANSI/APSP/ICC–14 2019 results in measures of standby loss that are approximately 15 to 23 percent lower than those would be if using a national average ambient temperature of  $56^\circ\text{F}$ . This change is because the rate of heat loss is approximately linearly related to the difference between the ambient temperature and the temperature of the water in the spa. This linear relationship between temperature difference and the rate of heat loss is the basis for the temperature normalization that is used in ANSI/APSP/ICC–14 2019 and that DOE is adopting in this final rule, as discussed later in this section. Use of a  $63^\circ\text{F}$  ambient temperature for calculating standby loss in ANSI/APSP/ICC–14 2019 results in a temperature difference that is  $7^\circ\text{F}$  less than it would be if using a nationally representative temperature of  $56^\circ\text{F}$  (*i.e.*,  $63^\circ\text{F} - 56^\circ\text{F} = 7^\circ\text{F}$ ). That  $7^\circ\text{F}$  results in a 15.2 percent lower calculated standby loss for portable electric spas tested at a  $102^\circ\text{F} \pm 2^\circ\text{F}$  water temperature [*i.e.*,  $7^\circ\text{F} / (102^\circ\text{F} - 56^\circ\text{F}) = 15.2$  percent], and a 22.6 percent lower calculated standby loss for exercise spas tested at a  $87^\circ\text{F} \pm 2^\circ\text{F}$  water temperature [*i.e.*,  $7^\circ\text{F} / (87^\circ\text{F} - 56^\circ\text{F}) = 22.6$  percent]. This magnitude of understatement of standby loss means that results determined using the ambient temperature in ANSI/APSP/ICC–14 2019 are not representative of an average use cycle or period of use for portable electric spas in the U.S. Therefore, DOE has determined that the use of a national average ambient temperature of  $56^\circ\text{F}$  will yield results that are more representative of the average standby loss of portable electric spas throughout the U.S. than results determined using ANSI/APSP/ICC–14 2019. As discussed in section III.D.11 of this final rule, DOE is adopting the use of  $56^\circ\text{F}$  as the representative ambient temperature in the normalization approach used for the standby loss calculation.

Regarding the seasonality of inflatable spas and the potential that representative test conditions for inflatable spas might include an ambient air temperature different from

rigid spas, namely a temperature averaged across such the inflatable spa season, DOE considers that the use of different representative ambient temperatures for different categories of portable electric spas would produce test results that are not comparable among the different categories of portable electric spas. Comparability of energy use ratings would be important for any consumer comparing inflatable spas with hard-shelled spas to understand the relative efficiencies between the different models. For these reasons, this final rule reflects use of the same average representative ambient air temperature (*i.e.*, 56 °F) for inflatable portable electric spas as for hard-shelled portable electric spas.

Regarding comments received discussing the accuracy and advantages of the normalization approach, DOE has reviewed the data submitted by PHTA/IHTA and agrees with the conclusion that these test results demonstrate that the normalization approach produces accurate test results and can enable the use of a wider range of ambient air temperatures during testing than DOE had proposed in the October 2022 NOPR. As a result, DOE is adopting an ambient temperature during testing of up to 63.0 °F in this final rule.

DOE recognizes that specifying the ambient air temperature as a maximum value (*e.g.*, a maximum of 63 °F), rather than a target value within a specified tolerance (*e.g.*, 56.0 ± 3 °F), yields a less burdensome approach for testing, for the reasons described in PHTA/IHTA's comments. In considering the relative similarities in accuracy (*i.e.*, representativeness) of the two approaches, as well as the differences in test burden between the two approaches, DOE has determined that the general approach currently used in ANSI/APSP/ICC-14 2019 of specifying only a maximum ambient air temperature—in conjunction with the normalization of measured test results—produces test results that measure the energy use of a portable electric spa during a representative average period of use while not being unduly burdensome to conduct.

Finally, as previously noted, PHTA/IHTA stated that a 56 °F ambient temperature requirement would require some existing test chambers to be upgraded to full air makeup systems. (PHTA/IHTA, No. 10 at pp. 5, 12) Although DOE is adopting the use of 56 °F as the representative ambient temperature for the normalization approach used in the standby loss calculation, DOE is adopting a maximum ambient temperature during testing of 63 °F, as discussed in the

previous two paragraphs. These requirements on ambient temperature during testing are identical to those of ANSI/APSP/ICC-14 2019. As a result, DOE has determined that there is no need for any test chambers to be upgraded due to the ambient temperature requirements of the test procedure in this final rule.

In summary, for the reasons discussed in the preceding paragraphs, this final rule specifies in section 3.2.1 of appendix GG that ambient air temperature be maintained at a maximum of 63.0 °F for the duration of the test, consistent with ANSI/APSP/ICC-14 2019. This ambient temperature requirement applies to each individual ambient air temperature measurement taken for the duration of the stabilization period and test period, as proposed in the October 2022 NOPR. Furthermore, in this final rule, the normalization of measured values in section 3.3 of appendix GG is based on a temperature of 56 °F as a nationally representative ambient air temperature for testing portable electric spas, as proposed in the October 2022 NOPR. The normalization approach used for the standby loss calculation is discussed further in section III.D.11 of this final rule.

#### 4. Chamber

##### a. Requirements in ANSI/APSP/ICC-14 2019

ANSI/APSP/ICC-14 2019 includes informative appendix A that provides minimum requirements for the test chamber in which the portable electric spa is installed. These include optional specifications regarding chamber internal dimensions, air circulation, chamber insulation, and chamber floor insulation.

In the October 2022 NOPR, DOE tentatively concluded that the specifications in appendix A to ANSI/APSP/ICC-14 2019 regarding chamber internal dimensions, air flow, and chamber insulation are appropriate for testing portable electric spas, and DOE proposed in section 3.1.1 of appendix GG to install portable electric spas in chambers meeting those specifications. 87 FR 63356, 63364. DOE requested comment on its tentative conclusion and proposal. *Id.*

In response to the October 2022 NOPR, PHTA/IHTA expressed support for DOE's tentative determination and proposal regarding chamber internal dimensions, air flow, and chamber insulation. (PHTA/IHTA, No. 10 at p. 13) The CA IOUs commented that standardizing internal chamber dimensions, air flow, and chamber

insulation would help to improve the repeatability of test results. (CA IOUs, No. 8 at p. 3) The CA IOUs also recommended that DOE require humidity controls and measurements to further improve the repeatability of test results. (*Id.* at p. 3) The CA IOUs explained that a portable electric spa in a sealed chamber with 100 percent relative humidity would have a lower evaporation rate and thereby a lower measured energy consumption than is representative of field use. (*Id.*) The CA IOUs also identified several test procedures for other products that require control of relative humidity and indicated that the CEC's portable electric spa test procedure adopted in 2004 required the measurement of average relative humidity during the test. (*Id.* at p. 4)

In response to the CA IOUs' recommendation to require humidity controls and measurements in the test procedure, DOE maintains that it is not clear these requirements are needed. Although the CA IOUs stated that evaporation is the primary source of standby loss from the portable electric spa, they did not provide any additional information aside from citing a CA IOUs report from 2014 submitted to the CEC ("2014 CA IOUs Report").<sup>28</sup> (CA IOUs, No. 8 at p. 3) That report provides no information on the amount of standby loss that is due to evaporation, aside from stating that "a majority of heat is lost through evaporation" and that spa covers with a good seal can reduce evaporation. As a result, it is possible that when the 2014 CA IOUs Report indicated that "a majority of heat is lost through evaporation," the authors were referring to the case when the portable electric spa is uncovered or has a poorly fitting cover. And it is not clear from these sources how much evaporation occurs during the proposed DOE test procedure, in DOE's investigative testing, however, the amount of portable electric spas' water lost to evaporation was very small. This testing was done with the spas' covers installed, as is required in the test procedure established in this final rule. Although the scenario described by the CA IOUs is technically possible, DOE's testing suggests it is unlikely to occur with portable electric spas commonly on the market.

In addition, the CA IOUs identified several test procedures for other products that require measurement and control of humidity. (CA IOUs, No. 8 at

<sup>28</sup> "Portable Electric Spas—California," California Energy Commission (California Investor-Owned Utilities, May 15, 2014). Available at, <https://efiling.energy.ca.gov/GetDocument.aspx?tm=73027&DocumentContentId=8328>.

p. 4) DOE notes that measurement and control of humidity is more important for those test procedures because each of those products either: actively modifies the humidity of the ambient or process air as part of their operation (*i.e.*, clothes dryers, dehumidifiers, central air conditioners, heat pump water heaters, and electric heat pump pool heaters); or moves air with a fan, for which humidity can affect air density and the resulting energy performance (*i.e.*, ceiling fans and furnace fans); or both. A portable electric spa does not do either of those things during the test for standby loss. Accordingly, DOE concludes that relative humidity does not significantly impact typical operation of a spa during testing and that it is unnecessary to require measurement and control of relative humidity. Therefore, DOE is not adopting requirements to measure and control relative humidity in the test procedure for portable electric spas.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting specifications for chamber dimensions, air flow, and chamber insulation in section 3.1 of appendix GG, which refer to those provisions in appendix A to ANSI/APSP/ICC–14 2019.

#### b. Chamber Floor Requirements

Appendix A to ANSI/APSP/ICC–14 2019 specifies that the test chamber floor may be insulated with 2 inches of polyisocyanurate insulation, that the insulation shall be laid directly on a level surface, and that the insulating layer shall be sheathed with at least 0.5 inches of plywood.

In the October 2022 NOPR, DOE conducted an analysis to determine whether these requirements would produce test results that reflect representative consumer use in a proposed test procedure for portable electric spas. 87 FR 63324, 63364. DOE reviewed installation and owner's manuals for a representative sample of portable electric spas available on the market and found that the majority of manuals specify that the preferred method of installation is directly on a poured concrete slab. *Id.* A smaller portion of manuals specify installation on a wooden deck, and a small number of manuals specify other acceptable installation surfaces, such as concrete pavers or crushed gravel. *Id.* None of the manuals that DOE reviewed specify installing the portable electric spa with insulation between the ground and the spa. *Id.* Presuming that portable electric spas are installed consistently with the installation manual, DOE's findings in

the October 2022 NOPR suggested that the most representative installation of a portable electric spa is to be installed directly on a concrete slab with no insulation between that surface and the spa. *Id.*

In the October 2022 NOPR, DOE presented data from investigative testing to determine the extent to which installation with the optional insulation specified in the chamber floor section of appendix A to ANSI/APSP/ICC–14 2019 impacts energy use in comparison to installation with no insulation. *Id.* The data indicated that the amount of insulation and plywood specified in the chamber floor section of appendix A to ANSI/APSP/ICC–14 2019 reduced standby loss by up to 37 percent compared to testing with no insulation. *Id.* As discussed in the October 2022 NOPR, these results demonstrated that the inclusion or exclusion of chamber floor insulation has a significant impact on measured energy use. *Id.*

DOE further explained in the October 2022 NOPR that although DOE was not aware of any portable electric spas that include insulation and/or other materials such as plywood as part of the installation materials for the spa, DOE presumed that a consumer would be likely to install insulation and/or plywood if insulation and/or wood were to be included with the spa and specified by the installation instructions to be installed for use. *Id.* at 87 FR 63364–63365. In such case, DOE tentatively concluded in the October 2022 NOPR that testing with the insulation and/or plywood provided would produce test results that are representative of consumer use. *Id.* at 87 FR 63365.

To ensure that test results are representative of an average consumer use cycle or period of use, DOE proposed in the October 2022 NOPR to specify in section 3.1.2 of appendix GG that portable electric spas be installed directly on a level concrete floor or slab. *Id.* Additionally, DOE proposed to specify that if insulation and/or plywood is provided with the spa, and the manufacturer's instructions indicate that insulation and/or plywood be installed between the ground and the spa for normal use, the spa is to be installed with the minimum amount of insulation and/or plywood between the floor and the spa that is specified by the manufacturer's installation instructions. Otherwise, no insulation or plywood is to be installed between the floor and the spa. *Id.*

DOE requested comment on its tentative determination that the most representative installation of a portable electric spa is directly on concrete with

no insulation between that surface and the spa. *Id.* DOE also requested comment on its presumption that a consumer would be likely to install insulation and/or wood if insulation and/or wood were to be included with the portable electric spa and specified by the installation instructions to be installed for use, and that in such cases, testing with the insulation and/or wood provided would produce test results that are representative of consumer use. *Id.*

In addition, DOE requested comment on its proposal to specify installing the portable electric spa directly on the chamber floor without any insulation between the spa and the floor. *Id.* Finally, DOE requested comment on the availability of concrete floors or slabs within test facilities and whether any test chamber floor alternatives, such as solid or perforated steel or aluminum floors, would represent portable electric spa operation when installed on concrete floors or slabs. *Id.*

In response to the October 2022 NOPR, PHTA/IHTA commented that consumers install portable electric spas on a wide range of foundations, including concrete slabs, brick/pavers, pea gravel, tile, marble, wood decking (including both ground-mounted and elevated), synthetic decking (including both ground-mounted and elevated), coated steel decking, and urethane decking material. (PHTA/IHTA, No. 10 at p. 13) PHTA/IHTA also stated that concrete slab thickness requirements vary greatly in the United States. (*Id.*)

PHTA/IHTA commented on DOE's presumption that a consumer would be likely to install insulation and/or wood if it were included with the portable electric spa and specified in the installation instructions to be installed for use and that in such cases, testing with the insulation and/or wood provided would produce results that are representative of consumer use. (PHTA/IHTA, No. 10 at p. 14) PHTA/IHTA stated that for portable electric spas other than inflatable spas, it is not industry practice to include insulation and/or wood as part of the installation materials, and they have no data supporting the presumption that a consumer would be likely to install insulation and/or wood if it were included. (*Id.*) PHTA/IHTA also stated that the idea of manufacturers including or recommending insulation adds variability to the portable electric spa test method because there is no guarantee the consumer will use it in their final installation. (*Id.*) PHTA/IHTA added that removal of the floor variable with a standardized reproducible floor provides better data to the end

consumer when comparing models for purchase. (*Id.*) Finally, PHTA/IHTA stated that the proposal of including a foundation with portable electric spa purchases would increase consumer cost and manufacturers' liability. (*Id.*) Regarding inflatable spas, PHTA/IHTA stated that these products are typically supplied with an insulating ground cover that the consumer is instructed to place underneath the inflated tub. (*Id.* at p. 13) PHTA/IHTA stated that they expect consumers to utilize the provided insulating ground cover during installation of inflatable spas, because they are put up and taken down seasonally. (*Id.* at p. 14)

PHTA/IHTA commented that DOE's proposal to specify testing on concrete floors with no additional insulation would not be repeatable and that varying concrete temperatures or thicknesses could significantly impact test results. (*Id.* at p. 7) PHTA/IHTA noted that a concrete floor introduces an uncontrolled variable regardless of construction. (*Id.*) PHTA/IHTA added that test results need to be independent of both the geographical location of test labs and the season during which testing is conducted and that testing on bare concrete would make test results dependent on each of those. (*Id.*) In the event that DOE continues to pursue testing on concrete without insulation, PHTA/IHTA recommended more testing be conducted to better determine the effects of the chamber floor change. (*Id.* at p. 8)

PHTA/IHTA commented also that not enough information was provided in the October 2022 NOPR about DOE's testing regarding the effect of changing floor conditions on portable electric spa standby loss. (*Id.*) PHTA/IHTA stated that industry was not able to provide its own data in time for comment, but that an early industry research project determined that the heat loss through the bottom of the spa was a relatively small portion of the total energy. (*Id.* at pp. 7–8) PHTA/IHTA encouraged DOE, due to lack of data, to conduct more analysis and reconsider the approach in the October 2022 NOPR. (*Id.* at pp. 8, 13)

Furthermore, PHTA/IHTA commented that testing on concrete may not actually be representative of concrete installations because a spa in the field would reach thermal equilibrium with the concrete surface it is installed on whereas one in a lab would not, and such a difference would lead to results not representative of customer use. (*Id.* at p. 8)

PHTA/IHTA commented that testing on pallets or simulated decks would remove the variability of heat losses

through the floor of the spa. PHTA/IHTA noted, however, that the ANSI/APSP/ICC–14 2019 writing committee recognized that the proportion of portable electric spas installed on decks was small and this added heat loss would skew the results for the vast majority of installations. (*Id.* at p. 7) PHTA/IHTA recommended that DOE maintain the chamber floor conditions specified in appendix A to ANSI/APSP/ICC–14 2019. (*Id.* at pp. 8, 13) PHTA/IHTA explained that the insulated floor used in ANSI/APSP/ICC–14 2019 and the platform with air flow beneath the spa used in CSA C374:11 (R2021) are not meant to be representative of typical installations, but instead to ensure the consistency of test results. (*Id.* at p. 7) PHTA/IHTA also stated that they are not aware of any test chambers that currently use the CSA standard platform, as that standard is not currently required. (*Id.*)

In response to DOE's request for comment regarding the availability of concrete floors or slabs within test facilities, PHTA/IHTA noted that they are not aware of any test chambers that have the ability to test on a concrete floor or slab without major renovations and that current test labs were designed to meet the ANSI/APSP/ICC–14 2019 testing protocol. (*Id.* at p. 14)

Similarly, the CA IOUs recommended that DOE maintain the chamber floor conditions specified in appendix A to ANSI/APSP/ICC–14 2019. (CA IOUs, No. 8 at p. 5) The CA IOUs stated that it is unclear whether installing portable electric spas on concrete represents standard consumer practice, indicating that several spa dealers and online sources provided advice for installing spas on concrete, plastic spa pads, and compacted gravel. (*Id.*) The CA IOUs commented that DOE's proposal to specify testing on concrete floors with no additional insulation would not be repeatable and that varying concrete temperatures or thicknesses could significantly impact test results. (*Id.*) The CA IOUs added that not enough information was provided in the October 2022 NOPR about DOE's testing regarding the effect of changing floor conditions on portable electric spa standby loss. (*Id.*)

The CA IOUs also estimated that ANSI/APSP/ICC–14 2019 compliant spas are significantly less susceptible to ground effect conductivity loss than low insulation baseline spas and stated that they believe evaporative losses impact test results more than the ground effect. (*Id.*) The CA IOUs suggested that DOE collect and publicly display additional data to demonstrate the value of modifying a test method to measure the

interaction between uninsulated ground and portable electric spas. (*Id.*) The CA IOUs commented it was unclear whether testing on a bare concrete floor would overpredict energy due to concrete's higher thermal conductivity relative to other mounting surfaces. (*Id.*)

The CA IOUs stated that ANSI/APSP/ICC–14 2019 is suitable for spa performance measurement and comparison for arbitrary ground surfaces, and they encouraged DOE to develop equations to extrapolate ground effect by base type (*e.g.*, concrete, wood, gravel, ABS plastic) for minimally insulated as well as moderate and high insulation spas in the consumer analysis of energy conservation standards. (*Id.*)

Master Spas commented that, regardless of the representativeness of installing a portable electric spa on concrete, testing on concrete may not actually be representative of concrete installations because a spa in the field would reach thermal equilibrium with the concrete surface it is installed on whereas one in a lab would not, and such a difference would lead to results not representative of customer use. (Master Spas, No. 7 at p. 2) Master Spas stated that DOE's proposal to specify testing on concrete floors with no additional insulation would not be repeatable and that varying concrete temperatures could significantly impact test results. (*Id.*) Master Spas asserted that test results need to be independent of both the geographical location of test labs and the season during which testing is conducted and that testing on bare concrete would make test results dependent on each of those. (*Id.*)

Master Spas commented that it is not clear whether testing on a concrete floor would result in significantly different normalized standby loss values than testing on an insulated chamber floor, especially for portable electric spas that currently satisfy ANSI/APSP/ICC–14 2019 minimum performance standards and are likely to have more internal insulation to resist effects of varying floors. (*Id.*) Master Spas also stated that no test data exists right now to answer this question, and that adopting the DOE proposal for floor conditions would be risky. (*Id.*)

In the event that DOE continues to pursue testing on concrete without insulation, the CEC requested that DOE specify control conditions for preparing and maintaining the temperature of the concrete slab. (CEC, No. 13 at p. 3) The CEC recommended that DOE continue collecting information to establish a testing floor representative of consumer use with standardized conditions. (*Id.*) The CEC also commented that DOE did not state in the October 2022 NOPR

whether it had considered stock distribution when estimating the distribution of spas recommended to be installed on a concrete floor. (*Id.*) The CEC noted that DOE's test results in the October 2022 NOPR did demonstrate a significant impact when changing the chamber floor's level of insulation. (*Id.*)

In contrast, the Joint Advocates commented that they agreed with DOE's conclusion that the preliminary test results in the October 2022 NOPR suggest the use of chamber floor insulation may result in unrepresentative standby loss ratings, and they supported DOE's efforts to ensure that the test procedure is representative. (Joint Advocates, No. 12 at p. 2)

As discussed, EPCA requires test procedures to be representative of an average use cycle and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) DOE had proposed in the October 2022 NOPR that testing on a concrete floor or slab would meet these criteria because it would provide representative results while not being unduly burdensome. 87 FR 63356, 63365. However, comments from stakeholders suggest that, although concrete may be a representative material used by consumers, there is uncertainty regarding whether testing on concrete would provide reproducible test results—and therefore uncertainty regarding whether testing on concrete would reliably provide representative test results among different test laboratories. (PHTA/IHTA, No. 10 at p. 14; CA IOUs, No. 8 at p. 5; Master Spas, No. 7 at p. 2) Comments also suggest that ensuring reproducible results from a concrete slab might require measures—such as control of the slab temperature—that could introduce substantial burden. (CEC, No. 13 at p. 3) Therefore, based on feedback provided in stakeholder comments, DOE has determined that there is uncertainty regarding whether testing on concrete would reliably produce representative test results without being unduly burdensome.

Regarding suggestions to specify testing with insulation between the spa and the floor, DOE received no comments disputing its tentative determination that consumers are likely to install non-inflatable spas without any insulation between the supporting surface and the spa, and no comments stated it is common for consumers to install spas on top of insulation. While comments indicate that testing on insulation may yield repeatable and reproducible test results, for the reasons presented in the October 2022 NOPR (including DOE's test data), DOE has

determined that testing on insulation would not yield results that are representative of consumer use, as required by EPCA. Testing on insulation underestimates the standby loss of portable electric spas as compared to testing with no insulation installed between the floor and the spa, as shown in DOE's investigative testing results in the October 2022 NOPR. 87 FR 63324, 63364. As discussed, no comments stated it is common for consumers to install spas on top of insulation. As a result, it is most representative to test a portable electric spa when installed on a surface with a temperature and thermal conductivity that is similar to those of the surfaces on which portable electric spas are commonly installed, such as concrete, brick, gravel, tile, marble, or decking (*see* PHTA/IHTA, No. 10 at p. 13). Insulation has a much lower thermal conductivity than any of those materials, and therefore insulation reduces the rate of heat transfer from the bottom surface of the spa to the floor. This results in lower rate of heat transfer from the bottom surface of the spa to the floor than would occur if the spa was installed on one of the common mounting surfaces. As a result, DOE finds that measures of standby loss determined from spas installed on top of insulation are lower than what is representative of the spa. Although the CA IOUs suggested the possibility of developing equations to extrapolate the effect of the ground surface from the results of tests performed on insulation (CA IOUs, No. 8 at p. 5), this approach is not feasible for the test procedure because the magnitude of the underestimate of standby loss due to testing on insulation will vary between spas based on differences in product design, such as the amount of insulation installed inside the body of the spa.

Through further consideration of the rationales presented by DOE in the October 2022 NOPR, as well as review of installation materials and consideration of stakeholder comments, DOE is specifying an approach in this final rule that addresses the challenges articulated by stakeholders and will provide test results that are representative without being unduly burdensome. DOE's review of installation manuals confirms that wooden decking is a common installation surface, as it was the second-most commonly listed mounting surface. Decking was also one of the common mounting surfaces that PHTA/IHTA indicated in their comments. (PHTA/IHTA, No. 10 at p. 13) Additionally, PHTA/IHTA commented that testing on pallets or simulated

decks would remove the variability of heat losses through the floor of the spa. (*Id.* at p. 7) DOE has determined that this test approach would address the concerns noted by stakeholders regarding reproducibility and produce representative test results by not limiting heat transfer from the bottom of a portable electric spa. Clause 5.1.1(b) and Figure 1 of CSA C374:11 (R2021) specify a wooden decking test platform that is placed directly on the test room floor. The outside dimensions of the platform are large enough to support the entire base of the spa, and the platform is constructed using standard construction 2 inch by 6 inch planking with 0.236 inch spacing between the planks. The structure is supported by three equally spaced beams constructed using four layers of 2 inch by 6 inch planking laminated together, providing a standardized gap of free air space beneath the deck. PHTA/IHTA commented that the wooden decking specified by CSA C374:11 (R2021) is intended to provide consistent test results. (*Id.*) Based on consideration of the comments received in response to the October 2022 NOPR, DOE has determined that testing on wooden decking would provide repeatable and reproducible test results and would yield test results that are representative of average consumer use cycle or period of use.

As discussed, in response to the October 2022 NOPR, several commenters expressed concern about the lack of reproducibility of the concrete slab data, and the lack of supporting data, and encouraged DOE to compile more analysis and reconsider the chamber floor approach in the October 2022 NOPR. (PHTA/IHTA, No. 10 at pp. 8, 13; CA IOUs, No. 8 at p. 5; Master Spas, No. 7 at p. 2) As discussed, DOE has evaluated the comments, reconsidered, and is adopting an alternate approach for the chamber floor. This approach requires installing the spa on the wooden decking specified by CSA C374:11 (R2021). DOE expects that this approach will allay the concerns of PHTA/IHTA and other commenters because PHTA/IHTA, in particular, stated in their comments in response to the October 2022 NOPR that they worked collaboratively to assist CSA with testing and data, including testing 4 portable electric spas for CSA, prior to the finalization, publishing, and implementation of CSA C374:11 (R2021). (PHTA/IHTA, No. 10 at p. 4) PHTA/IHTA also stated that the platform specified by CSA C374:11 (R2021) is intended to provide consistent test results, which would

alleviate the repeatability concerns noted by commenters. (*Id.* at p. 7) As a result, DOE expects that stakeholders will be satisfied with the reproducibility of test data produced from tests performed using the platform specified in CSA C374:11 (R2021).

Regarding the question of burden, PHTA/IHTA suggested that test labs might not currently be equipped with the wooden platform specified by CSA C374:11 (R2021). (PHTA/IHTA, No. 10 at p. 7) However, DOE expects that the type of platform specified by CSA C374:11 (R2021) could be built at relatively modest cost (see section III.F of this final rule for more details on cost). Based on these considerations, DOE has determined that it would not be unduly burdensome to require testing on the wooden platform specified by CSA C374:11 (R2021).

In summary, in this final rule, DOE is requiring testing of portable electric spas on the wooden platform specified by CSA C374:11 (R2021). DOE has determined that this requirement will produce test results that are representative of an average consumer use cycle or period of use without being unduly burdensome. DOE is specifying this requirement in section 3.1.2 of appendix GG by incorporating by reference CSA C374:11 (R2021) in 10 CFR 430.3 and specifying in section 3.1.2 of appendix GG to install the portable electric spa on a platform as specified in Clause 5.1.1(b) and Figure 1 of CSA C374:11 (R2021).

## 5. Electrical Supply Voltage and Amperage Configuration

Section 5.5.6 of ANSI/APSP/ICC-14 2019 specifies that the voltage supplied to the portable electric spa be within 10 percent of the nameplate voltage during testing but specifies no other requirements for the electrical supply or amperage configuration. The following paragraphs discuss additional considerations regarding voltage supply and amperage configuration relevant to testing portable electric spas.

DOE's market research indicates that most portable electric spas operate at a single voltage (e.g., either 120 or 240 volts ("V"), nominally). Models that operate at 120 V are often referred to as "plug and play" models and are plugged into an ordinary 120 V electrical outlet. Models that operate at 240 V are typically required to be permanently connected (i.e., hard wired) into a 240 V circuit, similar to that which would supply an electric water heater. DOE is aware of models on the market that can be configured to operate at either 120 V or 240 V, depending on the preference of the consumer. Such models are most

often pre-configured by the manufacturer to operate at 120 V and include instructions for converting the model to operate at 240 V. The conversion process typically requires changing the configuration of internal wiring and controls in addition to changes to the external wiring.

Similarly, certain portable electric spas on the market allow the consumer to configure the maximum amperage at which the portable electric spa can operate at a particular voltage level. This configurability ensures that the operation of the portable electric spa is compatible with the electrical service of the home. For example, for a home with a 50 ampere ("A") circuit breaker available, all the features on a particular portable electric spa may be capable of operating at the same time; whereas, for a home with only a 30 A circuit breaker available, the portable electric spa may still operate, albeit with reduced or restricted functionality. Units that provide amperage configurability most commonly operate at 240 V. On such units, changing the maximum amperage corresponds to allowing more or fewer components to operate at the same time (e.g., whether the heater is able to be energized at the same time as a secondary pump), or setting the level of operation for certain components (e.g., varying the number of heating elements that can operate simultaneously).

The choice of voltage and maximum amperage can affect the rate of heating in the portable electric spa and the occurrence of multiple components of the spa (e.g., pump and heater) operating simultaneously. These differences in operation may affect measured energy use. Therefore, in the October 2022 NOPR, DOE tentatively concluded that additional specifications regarding the supply voltage and amperage configuration to be used during testing would ensure the reproducibility of the DOE test procedure across different test laboratories. 87 FR 63356, 63365.

In the October 2022 NOPR, DOE proposed in section 3.1.3 of appendix GG a hierarchy to use for configuring the voltage and amperage configuration of the portable electric spa during testing in section 3.1.3 of appendix GG. *Id.* Specifically, DOE proposed that if the portable electric spa can be installed or configured with multiple options of voltage, maximum amperage, or both, testing should use the as-shipped configuration. *Id.* If no configuration is provided in the as-shipped condition, DOE proposed that testing be conducted using the option specified in the manufacturer's instructions as the recommended configuration for normal

consumer use. *Id.* If no configuration is provided in the as-shipped condition and the manufacturer's instructions do not provide a recommended configuration for normal operation, DOE proposed that testing be conducted using the maximum voltage specified in the manufacturer's installation instructions and the maximum amperage that the manufacturer's installation instructions specify for use with the maximum voltage. *Id.*

DOE requested comment on the proposed hierarchy for specifying voltage and maximum amperage for portable electric spas that have multiple options for voltage and/or amperage. *Id.* DOE also requested comment on any cases for which the proposed language would not make clear the voltage and/or maximum amperage to be used during testing. *Id.*

In response to DOE's request for comment in the October 2022 NOPR, the Joint Advocates supported DOE's proposed hierarchy to add clarification and make the test procedure more reproducible. (Joint Advocates, No. 12 at p. 2) However, the CEC recommended using the maximum voltage and maximum amperage on the nameplate for testing rather than the proposed hierarchy. (CEC, No. 13 at pp. 3–4) The CEC stated that the proposed hierarchy method introduces variability by relying on as-shipped configurations and manufacturer's instructions, as each manufacturer may configure and operate their spas differently. (*Id.* at p. 4) In addition, the CEC noted that as-shipped configurations may or may not be included in the literature provided by manufacturers, and manufacturer manuals are typically updated annually while older dated manuals are archived and not accessible to the public after a certain period. (*Id.*) The CEC indicated that, to ensure compliance, manufacturers and test laboratories must keep records of all manuals for tested units and tests must be repeatable. (*Id.*) The CEC continued that it is more accessible and manageable to rely on information permanently marked on the nameplate of a spa than on manufacturer literature that may be amended or become unavailable. (*Id.*)

PHTA/IHTA stated that portable electric spas should be installed and tested to the manufacturer's instructions. (PHTA/IHTA, No. 10 at p. 14) PHTA/IHTA also stated that the amperage rating is not relevant to energy performance in the mode of operation in DOE's proposed test procedure because the amperage is only used for sizing the breaker relevant to manual operations such as turning on the jet pumps, which are not used in the proposed test



procedure. (*Id.*) Finally, PHTA/IHTA recommended the final rule clearly state that a 10 percent voltage fluctuation in the unregulated power source is allowed during testing. (*Id.*)

Regarding the CEC's recommendation to use the maximum voltage and current on the nameplate instead of using a hierarchy, DOE has determined that it is most representative to preferentially use the most commonly used voltage and maximum amperage settings instead of using only the maximum values on the nameplate. Although the nameplate maximums might be easier to identify and trace over several years, as suggested by the CEC, they are not necessarily the most commonly used settings. DOE considers it most likely that consumers would set up a portable electric spa using the as-shipped settings or the manufacturer's recommended configuration for normal consumer use and would only use the maximum values of each if no as-shipped or recommended configuration is available. For these reasons, DOE is using a hierarchy in this final rule.

Regarding the CEC's comment that as-shipped configurations may or may not be included in the literature provided by manufacturers, the as-shipped configuration does not need to be included in literature because it is the configuration that exists when the unit is shipped to the customer. Regarding the CEC's comment that older dated manuals are archived and not accessible to the public after a certain period, appliance efficiency tests are typically performed on new products, which are typically shipped with a manual. As a result, older manuals are not typically required for appliance efficiency testing.

In response to PHTA/IHTA's comment that the amperage is not relevant to energy performance in the DOE test procedure, it is likely that the setting for maximum amperage has no impact on the measured standby loss for many or most models. It is also possible that there are some models for which the setting for maximum amperage does have an impact on the measured standby loss, due to variations in the heating or pump settings in different maximum amperage settings. As a result, DOE considers it most representative to include the setting for maximum amperage in the hierarchy, instead of including only the setting for voltage, to ensure that the unit is set up with the setting for maximum amperage that is commonly used in the field. DOE also notes that adjusting the setting for maximum amperage of a portable electric spa is typically performed by adjusting settings on the setup panel of the spa, and therefore is not unduly

burdensome. For these reasons, DOE is including the setting for maximum amperage in the hierarchy being adopted in this final rule.

In response to PHTA/IHTA's comment about allowing voltage to be within 10 percent of the nameplate rating during testing, that tolerance is currently specified in section 5.5.6 of ANSI/APSP/ICC-14 2019, which DOE is adopting in the test procedure.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting the requirements on electrical voltage and maximum amperage configuration in section 3.1.3 of appendix GG as proposed in the October 2022 NOPR. DOE is also dividing the requirements into subsections 3.1.3.1 and 3.1.3.2 in section 3.1.3 of appendix GG to make the requirements clearer.

## 6. Fill Volume

Section 3 of ANSI/APSP/ICC-14 2019 defines two quantities for the volume of water in a portable electric spa: fill volume and rated volume. "Fill volume" is the amount of water that is required to be in the spa during testing and is defined as the halfway point between the bottom of the skimmer opening and the top of the skimmer opening. In the absence of a wall skimmer, the fill volume is 6 inches (152 mm) below the overflow level of the spa. "Rated volume" is defined as the water capacity of a portable electric spa, in gallons (liters), as specified by the manufacturer on the spa, on the spa packaging, or the spa marketing materials. ANSI/APSP/ICC-14 2019 provides no requirement for the rated volume to correspond to the fill volume. ANSI/APSP/ICC-14 2019 also does not specify any tolerance on the fill volume measurement.

DOE compared fill volume and rated volume of portable electric spas on the market by reviewing certification records available in the CEC Modernized Appliance Energy Efficiency Database System ("MAEDbS").<sup>29</sup> Fill volume and rated volume are equivalent for some models but differ for other models. For most models with differing values of fill volume and rated volume, the variation is within a few percent. For example, in some cases, the value of rated volume corresponds to the fill volume rounded to the nearest multiple of 10. For other models, however, the difference

between rated and fill volume is much greater than any difference due to rounding, ranging from 10 to 50 percent of fill volume.

The volume of the water in a portable electric spa has a significant effect on the energy consumption of the spa, such that any significant difference between fill volume and rated volume for particular portable electric spas suggests that the standby loss determined for those models (based on fill volume) may not be representative of the way those models are advertised or used by consumers (presumably, rated volume). Furthermore, lack of tolerance on the fill level specification may result in variation in the fill level that could reduce repeatability and reproducibility of the test.

In the October 2022 NOPR, DOE made several proposals on how the volume of water in portable electric spas would be defined, determined during testing, and represented. 87 FR 63324, 63366.

First, DOE proposed to exclude from incorporation by reference the definitions of "fill volume" and "rated volume" in ANSI/APSP/ICC-14 2019, and to create a new definition of "fill volume" in section 2.5 of appendix GG. *Id.* DOE proposed to define "fill volume" as the volume of water held by the portable electric spa when it is filled according to the filling instructions specified in section 3.1.4 of appendix GG. *Id.* DOE made this proposal to prevent the ambiguity in representations of volume that DOE had identified for some models in the CEC MAEDbS. *Id.*

Second, to ensure that the volume of water in the portable electric spa during testing is representative of consumer use, DOE proposed to exclude the spa filling instructions in section 5.5.2 of ANSI/APSP/ICC-14 2019 and to define new filling instructions that refer to manufacturer's instructions in section 3.1.4 of appendix GG. *Id.* Section 3.1.4 of appendix GG would specify filling the spa with water as follows:

(a) If the manufacturer's instructions specify a single fill level, fill to that level with a tolerance of  $\pm 0.125$  inches.

(b) If the manufacturer's instructions specify a range of fill levels and not a single fill level, fill to the middle of that range with a tolerance of  $\pm 0.125$  inches.

(c) If the manufacturer's instructions do not specify a fill level or range of fill levels, fill to the halfway point between the bottom of the skimmer opening and the top of the skimmer opening with a tolerance of  $\pm 0.125$  inches.

(d) If the manufacturer's instructions do not specify a fill level or range of fill levels, and there is no wall skimmer, fill to 6.0 inches  $\pm 0.125$  inches below the overflow level of the spa. *Id.*

<sup>29</sup> The CEC Modernized Appliance Efficiency Database System. Available at [cacertappliances.energy.ca.gov](https://cacertappliances.energy.ca.gov) (Last accessed May 23, 2023).

Third, to ensure that the fill volume includes the water in all components of the portable electric spa, DOE proposed in section 3.1.4 of appendix GG to follow the manufacturer's instructions for filling the spa with water, connecting and/or priming the pump(s), and starting up the spa. *Id.* After verifying that the portable electric spa is operating normally and that all water lines are filled, DOE proposed to power off the spa and adjust the fill level as needed. *Id.* DOE proposed to measure the volume of water added to the portable electric spa with a water meter while filling the spa, and to measure any water removed from the spa using a water meter, graduated container, or scale with an accuracy of  $\pm 2$  percent of the quantity measured. *Id.* DOE proposed to define "fill volume" as the volume of water held by the portable electric spa when the spa is filled, as specified in section 3.1.4 of appendix GG. *Id.*

Finally, DOE proposed that all representations of fill volume be within 5 gallons of the mean fill volume measured for the sample of the basic model. *Id.* The proposed requirement would allow manufacturers to continue to represent fill volume as a value rounded to the nearest multiple of 10, because any such rounded value would vary by no more than 5 gallons from the measured value. *Id.* Further discussion of DOE's proposals regarding represented values is detailed in section III.E.2 of this final rule.

DOE requested comment on its proposals to exclude from incorporation by reference the definitions of "fill volume" and "rated volume" in ANSI/APSP/ICC-14 2019, to define a new term for "fill volume," and to specify new filling instructions in appendix GG. *Id.* DOE also requested comment on its proposal to specify a tolerance of  $\pm 0.125$  inches on the defined fill level and on whether any other tolerances on fill level, such as  $\pm 0.0625$  inches or  $\pm 0.25$  inches, would be more appropriate than  $\pm 0.125$  inches. *Id.* at 87 FR 63367. Finally, DOE requested comment on its proposal to allow represented values of fill volume to be within 5 gallons of the mean fill volume measured for the sample of the basic model. *Id.*

DOE received comments from the CEC, the Joint Advocates, and PHTA/IHTA on the proposals in the October 2022 NOPR for definitions and fill level instructions. The CEC supported DOE's proposal to exclude the definition of "rated volume" from incorporation by reference because DOE is not proposing labeling requirements in the proposed rulemaking. (CEC, No. 13, at p. 4) The Joint Advocates commented in support

of the additional proposed specifications to ensure that the fill volume in testing is representative. (Joint Advocates, No. 12 at p. 2) PHTA/IHTA expressed no position on the proposed change from the filling instructions in ANSI/APSP/ICC-14 2019 and deferred to individual manufacturer comments. (PHTA/IHTA, No. 10 at p. 15) DOE received no individual manufacturer comments on this topic.

PHTA/IHTA stated that they do not see any significant issue with using manufacturer-recommended fill level for the test, as it provides clarity to the end user. (*Id.*) PHTA/IHTA also explained that, although ANSI/APSP/ICC-14 2019 sets a uniform method for filling a portable electric spa, the ANSI/APSP/ICC-14 2019 fill level requirements do not always agree with typical user fill levels. (*Id.*) PHTA/IHTA stated that the ANSI/APSP/ICC-14 2019 fill level is often similar to the user fill level, but the user fill level can differ from the ANSI/APSP/ICC-14 2019 fill level due to the way the portable electric spa is designed to meet a specific consumer experience or other physical, operational, or cosmetic requirements. (*Id.*) PHTA/IHTA stated that the recommended fill line for inflatable spas is lower than the ANSI/APSP/ICC-14 2019 fill level. (*Id.*) PHTA/IHTA also stated that there are other models for which the recommended fill line is approximately 2 inches higher than the ANSI/APSP/ICC-14 2019 fill level, and for which the ANSI/APSP/ICC-14 2019 fill volume would interfere with normal operation because it would not cover all the jets. (*Id.*)

PHTA/IHTA and the CEC commented in support of DOE's proposal to allow a tolerance of  $\pm 0.125$  inches on fill level requirements. (PHTA/IHTA, No. 10 at p. 15; CEC, No. 13 at p. 4) The CEC supported adding instructions specifying that all water lines are filled, but the CEC recommended using the filling instructions in ANSI/APSP/ICC-14 2019 rather than the hierarchy proposed in the October 2022 NOPR. (CEC, No. 13, at p. 4) The CEC indicated that relying on manufacturer's instructions is not necessarily representative of consumer use if each manufacturer is different in providing instructions with various setup options. (*Id.*) The CEC recommended that DOE specify testing conditions that are identical for all manufacturers to ensure standardized conditions and comparable testing results across all products. (*Id.*)

Regarding representations of fill volumes, the CEC supported specifying

the value of the fill volume to be a whole number within 5 gallons to allow consumers to easily compare similarly sized spas. (*Id.* at p. 5) Conversely, PHTA/IHTA commented that 5 gallons is a very tight tolerance for represented fill volumes, even with the proposed  $\pm 0.125$ -inch fill tolerance, and that changes to plumbing or configuration could affect the volume and affect whether portable electric spas that would otherwise be grouped under the same basic model could be represented as having the same fill volume. (PHTA/IHTA, No. 10 at p. 15)

In response to the CEC's comments recommending the use of the filling instructions in ANSI/APSP/ICC-14 2019 rather than the hierarchy proposed in the October 2022 NOPR, DOE concludes that the hierarchy proposed in the October 2022 NOPR is more representative than the fill level specified by ANSI/APSP/ICC-14 2019 because the hierarchy uses the fill level that is specified in the model-specific manufacturer's instructions, if available, instead of relying only on the geometrical relationships in ANSI/APSP/ICC-14 2019 that are not specific to the model. Although the CEC indicated that relying on manufacturer's instructions is not necessarily representative of consumer use if each manufacturer provides different instructions and instead recommended that DOE specify testing conditions that are identical for all manufacturers (CEC, No. 13, at p. 4), DOE has concluded that the most representative fill level to use for each model is the fill level that would be used most commonly for that model by consumers. As indicated in comments by PHTA/IHTA, the ANSI/APSP/ICC-14 2019 fill level is often similar to the user fill level, but the user fill level can differ from the ANSI/APSP/ICC-14 2019 fill level due to the way the portable electric spa model is designed to meet a specific consumer experience or other physical, operational, or cosmetic requirements. (PHTA/IHTA, No. 10 at p. 15) DOE concludes that the manufacturer's instructions, if available, provide the best indication of the typical user fill level because the manufacturer's instructions take into consideration the design and intended use of the model, and the instructions are the primary literature used by a consumer to determine the proper use of the portable electric spa. As a result, DOE concludes that the filling instructions in ANSI/APSP/ICC-14 2019 are not as representative of an average use cycle or period of use as the filling instructions proposed in the October 2022 NOPR.

In response to PHTA/IHTA's comment on the proposed tolerance for represented value for fill volume, it is true that a  $\pm 0.125$ -inch fill level tolerance could allow for a variation in total fill volume of greater than 5 gallons between multiple tests on the same portable electric spa. However, the 5-gallon allowance in representations of fill volume does not necessarily delineate basic models, as suggested by PHTA/IHTA's comment. Rather, as described in section III.E.1 of this final rule, manufacturers have the ability to determine how they want to group individual models into basic models, as long as the individual model used to represent each basic model has the highest standby loss of all individual models in that basic model. As a result, a manufacturer could group multiple individual models of similar volumes into a single basic model and use test results from the individual model with the highest standby loss to represent that basic model. The 5-gallon allowance applies only to the flexibility that the manufacturer has in representing the mean fill volume from the testing of the individual model being used to represent the basic model. Therefore, DOE concludes that the 5-gallon allowance on represented fill volume is not overly narrow, and DOE is proceeding with its proposal.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is finalizing its proposals on fill volume as proposed in the October 2022 NOPR.

#### 7. Spa Cover

Portable electric spas are typically covered when not in active use. The standby loss of a portable electric spa is significantly affected by the presence and thermal properties of a spa cover. Section 5.5.5 of ANSI/APSP/ICC-14 2019 requires that the manufacturer's specified cover be used during the test. Section 3 of ANSI/APSP/ICC-14 2019 defines "cover, specified" as the cover that is provided or specified by the manufacturer. However, ANSI/APSP/ICC-14 2019 does not specify how to conduct testing if the manufacturer does not specify a cover. For such cases, differences in laboratory decisions regarding the spa cover to be used for testing could result in significant variation in results between laboratories (*i.e.*, low reproducibility of test results) and could also produce test results that are not representative of average consumer use.

In the October 2022 NOPR, DOE proposed to exclude section 5.5.5 of ANSI/APSP/ICC-14 2019, which

requires use of the manufacturer's specified cover during testing, and to exclude the definition in ANSI/APSP/ICC-14 2019 for "cover, specified." 87 FR 63356, 63367. DOE proposed instead to specify in section 3.1.5 of appendix GG to install the spa cover following the manufacturer's instructions. *Id.* Additionally, DOE proposed that if a basic model is distributed with multiple covers designated by the spa manufacturer for use with the basic model, the manufacturer must determine all represented values for that basic model based on the cover that results in the highest standby loss, except the manufacturer may choose to identify specific individual combinations of spa and cover as additional basic models. *Id.*

In the October 2022 NOPR, DOE proposed to provide instructions for testing if the manufacturer does not specify a particular cover to be used with a portable electric spa. *Id.* DOE tentatively concluded that some consumers would opt to use a low-cost, minimally insulative cover if the spa manufacturer does not specify use of a particular cover. *Id.* As such, if a cover were not specified for use with a basic model, DOE proposed to specify the following in section 3.1.5 of appendix GG: If no cover is designated by the spa manufacturer for use with the portable electric spa, cover the spa with a single layer of 6 mil thickness (0.006 in; 0.15 mm) plastic film. Cut the plastic to cover the entire top surface of the spa and extend over each edge of the spa approximately 6 inches below the top surface of the spa. Use fasteners or weights to keep the plastic in place during the test, but do not seal the edges of the plastic to the spa (by using tape, for example). *Id.*

DOE also noted in the October 2022 NOPR that this proposal may not be applicable when the spa manufacturer specifically designates a portable electric spa model for use without a cover or with "no cover" as one of multiple cover options designated by the spa manufacturer. *Id.* In both of these cases, testing the spa with a cover made of 6 mil plastic might not be representative of field use and, therefore, it might be more representative to test the spa without a cover. *Id.* DOE requested comment on its proposed requirements for testing a portable electric spa that does not have a cover designated for use by the spa manufacturer, on whether manufacturers would ever designate a portable electric spa model to be used without a cover, or designate a "no cover" option, and how such a spa should be tested to determine the

highest standby loss. *Id.* at 87 FR 63366–63367.

In response to the October 2022 NOPR, the CEC, the CA IOUs, and the Joint Advocates expressed support for DOE's proposal regarding spa cover specifications during testing. (CEC, No. 13 at pp. 4–5; CA IOUs, No. 8 at p. 2; Joint Advocates, No. 12 at pp. 2–3) Both PHTA/IHTA and the CEC commented that they are not aware of manufacturers that designate a "no cover" option or manufacturers that do not ship an approved cover with the portable electric spa. (PHTA/IHTA, No. 10 at p. 16; CEC, No. 13 at p. 5) PHTA/IHTA emphasized that no spa would be able to pass a reasonable minimum energy efficiency standard without a cover and stated that they presumed any DOE test procedure would provide a minimum requirement that could not be met without a cover. (PHTA/IHTA, No. 10 at p. 16) Instead of the plastic film proposed by DOE to cover a portable electric spa without a designated cover, the CEC suggested using a cover that uses the same material and design as an inflatable spa cover. (CEC, No. 13 at pp. 4–5)

In response to the CEC's comment regarding covers of the same design and material as inflatable spa covers, DOE notes that portable electric spas consume significantly more energy when the spa cover is removed and manufacturer's instructions that do not specify the use of a cover may lead some consumers to use only a low-cost, minimally protective cover that would prevent debris from entering the spa but would not provide substantial insulative properties. Therefore, it is necessary to simulate a low-cost, minimally protective cover for testing if a cover is not specified by a manufacturer. Although covers resembling those used by inflatable spas may represent a lower-efficiency option than common covers for rigid spas, DOE finds that these covers provide more insulation than the plastic film proposed in the October 2022 NOPR. As a result, such covers would not meet the requirement of a low-cost, minimally protective cover as well as the plastic film proposed by DOE.

Therefore, for the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is finalizing its requirements for installing a spa cover in section 3.1.5 of appendix GG.

DOE discusses its proposal on representations related to spa covers in section III.E.2 of this final rule.

## 8. Air Temperature Measurement Location

Section 5.6.3 of ANSI/APSP/ICC–14 2019 requires that ambient air temperature be measured at one point located 12 to 18 inches above the level of the spa cover and a minimum of 8 inches from the wall of the chamber. The temperature probe will be positioned and out of direct airflow from the circulation fan. ANSI/APSP/ICC–14 2019 does not provide any further requirements on the location of the ambient air temperature measurement point, such that it would be possible in a large chamber for the measurement point to be located beyond the immediate proximity of the portable electric spa. In the October 2022 NOPR, DOE noted that this lack of direction presents the possibility that the temperature could be taken at a location in the chamber with an ambient temperature that is different than the ambient temperature immediately around the portable electric spa. 87 FR 63356, 63368.

In the October 2022 NOPR, DOE proposed further requirements on the horizontal location of the ambient air temperature measurement point. *Id.* Specifically, DOE proposed in section 3.1.6 of appendix GG that the ambient air temperature measurement point specified in section 5.6.3 of ANSI/APSP/ICC–14 2019 must be located above the center of the portable electric spa. *Id.* DOE tentatively concluded that this proposed requirement ensures that ambient temperature is measured in the immediate vicinity of the portable electric spa and in the same general location each time, thereby increasing test repeatability. *Id.*

DOE requested comment on its proposal. *Id.* PHTA/IHTA commented that DOE's proposal reflects what is intended in ANSI/APSP/ICC–14 2019 and is common practice in the industry. (PHTA/IHTA, No. 10 at p. 16) PHTA/IHTA continued that it fully supports DOE's proposal to clarify ambient air temperature measurement location. (*Id.*) The CEC also commented in support of clarifying the horizontal position at which to measure the ambient temperature to ensure the measurement is taken in the same location in every test. (CEC, No. 13 at p. 5)

For the reasons stated in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting specifications in section 3.1.6 of appendix GG that the ambient air temperature measurement point specified in section 5.6.3 of ANSI/APSP/ICC–14 2019 must be located

above the center of the portable electric spa.

## 9. Water Temperature Settings

The definition of “standby mode” in ANSI/APSP/ICC–14 2019 indicates that water temperature settings may be adjusted to meet the test conditions.<sup>30</sup> ANSI/APSP/ICC–14 2019 does not specify, however, whether adjustments to the water temperature settings can be made during the test. Spa users typically leave a portable electric spa at the desired water temperature setting while the spa is operating in default operation mode with the cover on. Based on these consumer usage patterns, water temperature adjustments during a test would be unrepresentative of field use. In addition, the permitting of water temperature setting adjustments during a test could influence the outcome of the test.

In the October 2022 NOPR, DOE tentatively concluded that water temperature setting adjustments would not be appropriate during the test, and that its proposed specification is required to ensure repeatable, reproducible, and representative test results. 87 FR 63356, 63368. DOE proposed in section 3.2.2 of appendix GG to specify that portable electric spa water temperature settings be adjusted to meet the test requirements, but that spa water temperature settings must not be adjusted between the start of the stabilizing period specified in section 5.6.1 of ANSI/APSP/ICC–14 2019 and the end of the test period specified in section 5.6.4.7 of ANSI/APSP/ICC–14 2019. *Id.*

DOE requested comment on its proposed requirement that water temperature settings must not be adjusted between the start of the stabilizing period and the end of the test period. *Id.* In response to DOE's request for comment in the October 2022 NOPR, both PHTA/IHTA and the CEC expressed support for DOE's proposal to clarify to not adjust water temperature settings during testing periods. (PHTA/IHTA, No. 10 at p. 16; CEC, No. 13 at p. 5) The CEC also noted that DOE's proposal reflects the intention of ANSI/APSP/ICC–14 2019 and current practice in the industry. (CEC, No. 13 at p. 5)

For the reasons stated in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is adopting in section 3.2.2 of appendix GG a specification that portable electric

spa water temperature settings be adjusted to meet the test requirements, but that spa water temperature settings must not be adjusted between the start of the stabilizing period specified in section 5.6.1 of ANSI/APSP/ICC–14 2019 and the end of the test period specified in section 5.6.4.7 of ANSI/APSP/ICC–14 2019.

## 10. Water Temperature Requirements

The sub-sections within section 5.6.1 of ANSI/APSP/ICC–14 2019 specify the range of water temperatures that are allowed during the test based on the capabilities of the portable electric spa.<sup>31</sup> In the October 2022 NOPR, DOE interpreted these requirements to apply to every temperature measurement taken during the test. 87 FR 63356, 63368. However, some consumer product test procedures specify requirements for the average temperature during a test instead of the individual temperature measurements.<sup>32</sup> In the October 2022 NOPR, DOE stated that the phrasing used in section 5.6.1 of ANSI/APSP/ICC–14 2019 could be interpreted to refer to requirements on the average temperature during the test instead of every temperature measurement taken during the test. *Id.*

DOE proposed in the October 2022 NOPR to specify explicitly in section 3.2.3 of appendix GG that each individual water temperature measurement taken during the stabilization period and test period must meet the applicable water temperature requirements specified in section 5.6.1 of ANSI/APSP/ICC–14 2019. *Id.* DOE proposed this specification to ensure that the water temperature requirements are interpreted consistently and repeatably because DOE tentatively determined the phrasing used in section 5.6.1 of ANSI/APSP/ICC–14 2019 creates the possibility that the range of water temperatures could vary between tests based on a laboratory's interpretation of whether the water temperature requirements apply to the average temperature or each individual measurement. *Id.* DOE conducted investigative testing and found that its

<sup>31</sup> For example, section 5.6.1.1 states that for exercise spas or the exercise portion of a combination spa, that are capable of maintaining a minimum water temperature of 100 °F (38 °C) for the duration of the test, the spa shall be tested at 102 °F ±2 °F (39 °C ±1 °C) and maintain a minimum water temperature of 100 °F (38 °C) for the duration of the test.

<sup>32</sup> For example, the test procedure for refrigerators and refrigerator-freezers at appendix A to subpart B of part 430 contains several requirements on the average temperature of the compartment(s) within the appliance.

<sup>30</sup> The definition of standby mode in section 3 of ANSI/APSP/ICC–14 2019 is as follows: All settings at default as shipped by the manufacturer, except water temperature, which may be adjusted to meet the test conditions. No manual operations are enabled.

proposed requirement can be met in typical spa operation. *Id.*

DOE requested comment on its proposal. *Id.* In response to the October 2022 NOPR, PHTA/IHTA commented that industry currently interprets requirements for individual water temperature measurements as proposed by DOE and that it supports DOE's proposal as it may better describe the original intent of what is provided for in ANSI/APSP/ICC-14 2019. (PHTA/IHTA, No. 10 at p. 16)

For the reasons stated in preceding paragraphs and in the October 2022 NOPR, in this final rule, DOE is adopting in section 3.2.3 of appendix GG a specification that each individual water temperature measurement taken during the stabilization period and test period must meet the applicable water temperature requirements specified in section 5.6.1 of ANSI/APSP/ICC-14 2019.

#### 11. Standby Loss Calculation

Section 5.7 of ANSI/APSP/ICC-14 2019 contains calculations for normalized standby power. This includes calculating the measured standby power and normalizing that standby power to a normalized temperature difference between the water in the spa and the ambient air. As discussed in section III.C.3 of this final rule, DOE is adopting a requirement to use the term "standby loss" instead of "normalized standby power." In addition, as discussed in section III.D.3 of this final rule, DOE is adopting a requirement to specify a representative ambient air temperature of 56 °F.

In the October 2022 NOPR, DOE proposed standby loss calculations in section 3.3 of appendix GG, including a normalized temperature difference of 46 °F (*i.e.*, 102 °F – 56 °F) for units tested at a water temperature of 102 °F ± 2 °F, and a normalized temperature difference of 31 °F (*i.e.*, 87 °F – 56 °F) for units tested at a water temperature of 87 °F ± 2 °F. 87 FR 63356, 63369. DOE calculated each proposed normalized temperature difference as the difference between the midpoints of the allowable water temperature and ambient air temperature ranges, which DOE tentatively concluded as being the most representative method for determining a normalized temperature difference. *Id.*

DOE's proposed approach to calculate the normalized temperature differs from the approach used in section 5.7 of ANSI/APSP/ICC-14 2019, which normalizes to a temperature difference equal to the minimum of the allowed water temperature range (*i.e.*, 100 °F or 85 °F) minus the maximum of the allowed ambient air temperature range

(*i.e.*, 63 °F). *Id.* DOE tentatively concluded that this approach may not be representative of an average use cycle because it normalizes standby loss to the minimum expected temperature difference resulting from the two defined ranges. *Id.*

DOE requested comment on the proposed standby loss calculations, including the method used to calculate normalized temperature differences based on the midpoint of the allowable temperature ranges. *Id.* DOE also requested comment on its tentative conclusion that normalizing standby loss to the midpoint of the allowable temperature ranges would produce test results that are more representative than normalizing standby loss to the minimum expected temperature difference between the allowable ranges. *Id.*

PHTA/IHTA strongly recommended that there be no change to the normalized temperature difference and that DOE use the minimum water temperature and maximum ambient temperature to determine the normalized temperature difference. (PHTA/IHTA, No. 10 at pp. 7, 17) PHTA/IHTA indicated that the particular normalized temperature difference has no effect on the comparison between portable electric spas at a given temperature difference, in that the ranking of portable electric spa standby loss will stay the same no matter the normalized temperature difference used. (*Id.* at pp. 6, 17) PHTA/IHTA also indicated that the minimum water temperature and maximum ambient air temperature were chosen to reduce the number of test results discarded due to temperatures being out of tolerance. (*Id.* at p. 17) Finally, PHTA/IHTA stated that if DOE feels strongly that the normalized temperature difference should be 46 °F, the formula specifying the allowed standby loss must be changed accordingly. (*Id.* at p. 7) Master Spas also commented that the current normalization method should be left intact, as it is representative, it is proven to be reproducible, and changing it would impose burden on the industry. (Master Spas, No. 7 at p. 2)

Regarding PHTA/IHTA's comment that use of the minimum water temperature and maximum ambient air temperature minimizes the discarding of test results, DOE concludes that the normalized temperature difference has no effect on whether test results are discarded. The validity of test results is based on the water and ambient air temperature tolerances during the test, which are different than the normalized temperature difference used for

normalizing the standby loss. The DOE test procedure uses the water temperature tolerances from ANSI/APSP/ICC-14 2019, and the ambient air temperature tolerances are discussed in section III.D.3 of this final rule.

PHTA/IHTA's statement that the ranking of portable electric spa standby loss will stay the same regardless of whether the normalized temperature difference used is accurate. DOE proposed to change the normalized temperature difference not to change the ranking of portable electric spa standby loss, but to make representations of standby loss more representative. To this end, it is more representative to base the normalized temperature difference on an air temperature of 56 °F—the ambient air temperature that DOE has determined as the representative national ambient temperature for portable electric spas in section III.D.3 of this final rule—than it is to base it on air temperature of 63 °F. It is also more representative to use the midpoint of the allowed water temperature range than it is to use the minimum of the allowed water temperature range, because it is DOE's understanding that the midpoint of each allowed temperature range (*i.e.*, 102 °F for most portable electric spas and 87 °F for exercise spas that cannot maintain a minimum water temperature of 100 °F) is the most commonly used temperature setting for the products using the respective range.

Regarding PHTA/IHTA's comment that the allowed standby loss must be changed if the normalized temperature difference is changed, DOE notes that if it were to establish an energy conservation standard for portable electric spas, that energy conservation standard would be based on the standby loss as measured by the DOE test procedure. As a result, any energy conservation standard would take into account the normalized temperature difference used in the DOE test procedure.

Therefore, for the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is finalizing in section 3.3 of appendix GG the standby loss calculations that were proposed in the October 2022 NOPR.

#### E. Represented Values Provisions

##### 1. Basic Model

In the course of regulating consumer products, DOE has developed the concept of a "basic model" to determine the specific product or equipment configuration(s) to which the regulations would apply. DOE's existing

definition of this term at 10 CFR 430.2 states that “basic model” means all units of a given type of covered product (or class thereof) manufactured by one manufacturer that have the same primary energy source and have essentially identical electrical, physical, and functional (or hydraulic) characteristics that affect energy consumption, energy efficiency, water consumption, or water efficiency.<sup>33</sup>

In the October 2022 NOPR, DOE tentatively determined that the general definition of “basic model” is appropriate for portable electric spas. 87 FR 63356, 63379. For the purposes of applying the proposed portable electric spa regulations, DOE proposed to rely on the definition of “basic model” as currently defined at 10 CFR 430.2. *Id.* As proposed, manufacturers would be required to test only a representative number of units of a basic model in lieu of testing every individual model they manufacture, and individual models of portable electric spas would be permitted to be grouped under a single basic model so long as all grouped models have the same representative energy performance, which is representative of the unit with the highest standby loss. *Id.*

DOE also proposed that if a basic model is distributed in commerce with multiple covers designated by the spa manufacturer for use with the basic model, a manufacturer must determine all represented values for that basic model based on the cover that results in the highest standby loss, except that the manufacturer may choose to identify specific individual combinations of spa and cover as additional basic models. *Id.* DOE addresses comments on this proposal regarding spa covers in section III.E.2 of this final rule.

DOE requested comment on the proposed applicability of the definition of “basic model” at 10 CFR 430.2 to portable electric spas. *Id.*

In written comments responding to the October 2022 NOPR, the CEC supported applying the definition of “basic model.” (CEC, No. 13 at p. 5) However, PHTA/IHTA and Master Spas stated that there is a lack of clarity on the features that constitute different basic models, and, without more clarity, manufacturers would only group basic models that have different aesthetic features (e.g., cabinet colors). (PHTA/IHTA, No. 10 at p. 17; Master Spas, No. 7 at pp. 2–3) Master Spas identified differences in fill volume, shape, size,

electric characteristics, and hydraulic characteristics as items that might be used to differentiate basic models.

(Master Spas, No. 7 at pp. 2–3) PHTA/IHTA also indicated that the use of a circulation pump and the number of jets are additional characteristics that might be used to distinguish models. (PHTA/IHTA, No. 10 at p. 17) PHTA/IHTA also argued that while DOE mentioned that basic models can help minimize test burden, the proposed method does not account for the testing required to determine the most consumptive spa within a given basic model. (*Id.*)

In response to the lack of clarity that PHTA/IHTA and Master Spas identified regarding the features that constitute a basic model, DOE notes that manufacturers can choose how they interpret the term “essentially identical” in the basic model definition, as long as the individual model used to represent the basic model has the highest standby loss of all individual models in that basic model. The more broadly they choose to interpret this term, the more individual models can potentially be grouped within a single basic model. Therefore, manufacturers have the ability to determine the number of basic models they want to represent, as long as the individual model used to represent each basic model has the highest standby loss of all individual models in that basic model.

Regarding PHTA/IHTA’s concern that DOE’s claim that basic models can help minimize test burden does not account for the testing required to determine the most consumptive spa within a given basic model, DOE notes that, as discussed, manufacturers have the ability to determine the number of basic models they want to represent, as long as the individual model used to represent each basic model has the highest standby loss of all individual models in that basic model. When determining that number, manufacturers can consider the testing required to determine the most consumptive spa within a given basic model to ensure that their total testing burden, including tests to determine the most consumptive spa within a given basic model, will be manageable. In addition, DOE notes that manufacturers of other products have used the basic model approach to considerably reduce the number of individual models that require testing. There is no clear reason why portable electric spa manufacturers should not be able to do the same thing by combining their product knowledge with judicious use of the basic model definition. The alternative approach would be to have manufacturers test and rate individual models with any difference in design as

unique basic models, which would increase testing burden far beyond PHTA/IHTA and Master Spas’s estimates. As a result, DOE concludes that the basic model approach should reduce the testing burden on portable electric spa manufacturers considerably, even when including the testing required to determine the most consumptive spa within a given basic model, when compared to testing all individual models.

Therefore, for the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is finalizing its proposal in the October 2022 NOPR to rely on the definition of “basic model” as currently defined at 10 CFR 430.2.

## 2. Represented Values

DOE provides requirements for represented values and sampling plans for all covered products in subpart B to 10 CFR part 429. The purpose of a statistical sampling plan is to provide a method to determine represented values of energy- and non-energy-related metrics for each basic model.

In the October 2022 NOPR, DOE proposed to create a new section at 10 CFR 429.66<sup>34</sup> for portable electric spas and to require that, for each basic model, a sample of sufficient size must be randomly selected and tested to ensure that any represented value of standby loss or other measure of energy consumption of a basic model for which customers would favor lower values is greater than or equal to the higher of the following two values:

- (1) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

and  $\bar{x}$  is the sample mean,  $n$  is the number of samples, and  $x_i$  is the maximum of the  $i^{\text{th}}$  sample;

Or,

- (2) The upper 95-percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{0.95} \left( \frac{s}{\sqrt{n}} \right)$$

and  $\bar{x}$  is the sample mean,  $s$  is the sample standard deviation,  $n$  is the number of samples, and  $t_{0.95}$  is the  $t$  statistic for a 95-percent one-tailed confidence interval with  $n - 1$  degrees of freedom (from appendix A of subpart B

<sup>33</sup> The definition of “basic model” in 10 CFR 430.2 also includes several product-specific paragraphs that are not relevant to portable electric spas.

<sup>34</sup> The section was proposed as 10 CFR 429.66 in the October 2022 NOPR, but it is being finalized in this final rule as 10 CFR 429.76, due to additional sections that have been added between the dates of the proposal and the final rule.

of 10 CFR part 429). 87 FR 63356, 63369.

DOE proposed in 10 CFR 429.66 that the represented value of standby loss must be a whole number of watts. *Id.* Additionally, DOE proposed that the represented value of fill volume must be a whole number of gallons that is within 5 gallons of the mean of the fill volumes measured for the units in the sample used to determine the represented value of standby loss. *Id.* DOE's proposal on fill volume representations is discussed in section III.D.6 of this final rule.

Portable electric spas are often available with more than one model of cover, and the characteristics of the cover can significantly affect measured standby loss. In the October 2022 NOPR, DOE proposed that if a basic model is distributed in commerce with multiple covers designated by the spa manufacturer for use with the basic model, a manufacturer must determine all represented values for that basic model based on the cover that results in the highest standby loss, except the manufacturer may choose to identify specific individual combinations of spa and cover as additional basic models. *Id.* at 87 FR 63370. DOE also proposed that if a basic model is distributed in commerce with no cover designated by the spa manufacturer for use with the basic model, a manufacturer must determine all represented values for that basic model by testing as specified in section 3.1.5.2 of appendix GG to subpart B of part 430. *Id.* DOE's proposal on testing units without a designated cover is discussed in section III.D.7 of this final rule.

DOE requested comment on the proposed statistical sampling procedures and representations requirements for portable electric spas. *Id.* DOE also requested comment on the proposal that represented values be based on testing with the designated cover that results in the highest standby loss or by testing as specified in section 3.1.5.2 of appendix GG to subpart B of part 430 if there is no designated cover. *Id.*

In response to the October 2022 NOPR, the CEC commented in support of DOE's proposal for providing calculation instructions on represented values and sampling plans. (CEC, No. 13 at p. 5) PHTA/IHTA requested clarification on the number of units for each basic model that would be required for testing to generate the 95-percent confidence level. (PHTA/IHTA, No. 10 at p. 17) PHTA/IHTA indicated that ANSI/APSP/ICC-14 2019 requires only a single unit to be tested and requested that DOE consider their concerns on how basic models are defined, as well

as the amount of time necessary to test each model, given that some test labs only have the capacity to test one portable electric spa at a time. (*Id.* at p. 17–18) Master Spas also highlighted the amount of time required for testing and requested that DOE allow manufacturers to test only a single unit of a basic model when grouping of models is not exercised. (Master Spas, No. 7 at p. 3) Master Spas also stated that they supported testing at least two spas per basic model if grouping was performed. (*Id.*)

PHTA/IHTA, the CEC, and the CA IOUs commented in support of DOE's proposal on the spa cover to use for representations. (PHTA/IHTA, No. 10 at p. 18; CEC, No. 13 at p. 4; CA IOUs, No. 8 at p. 2)

Regarding PHTA/IHTA's request for clarification of the number of units of each basic model that need to be tested, the proposed section 10 CFR 429.66(a)(2) states that the sampling requirements of 10 CFR 429.11 are applicable to portable electric spas. 10 CFR 429.11(b) states that the minimum number of units tested shall be no less than two, except where a different minimum limit is specified for the product or only one unit of the basic model is produced, in which case that single unit must be tested. As a result, at least two units of a basic model of portable electric spas must be tested, unless only one unit of the basic model is produced, in which case that single unit must be tested. Additionally, although PHTA/IHTA stated that ANSI/APSP/ICC-14 2019 requires only a single unit to be tested, DOE has not been able to identify any specification of the number of units to be tested in ANSI/APSP/ICC-14 2019. As a result, DOE surmises that agencies that choose to use ANSI/APSP/ICC-14 2019 as part of a State or local energy conservation program or energy code, or manufacturers that choose to use ANSI/APSP/ICC-14 2019 on a voluntary basis, would choose the number of units to be tested per basic model.

Regarding the comments from PHTA/IHTA and Master Spas on the potential for testing only one unit of a basic model instead of two, DOE notes that, as discussed, manufacturers have the ability to determine the number of basic models they want to represent, as long as the individual model used to represent each basic model has the highest standby loss of all individual models in that basic model. When determining that number, manufacturers can consider the need to test at least two units for each basic model to ensure that their total testing burden, including testing at least two units for each basic

model, will be manageable. DOE surmises that this ability to define the grouping of individual models into basic models addresses the concerns of Master Spas and PHTA/IHTA, because Master Spas stated that they supported testing at least two spas per basic model if grouping were performed, and PHTA/IHTA referred to their concerns on basic model definition (discussed in section III.E.1) as part of their comment on the sample size. DOE also notes that these same minimum requirements are used across almost all products with DOE test procedures, with a wide range of required test durations. PHTA/IHTA did not make clear why manufacturers of portable electric spas would require a sample size smaller than those of other products. As a result, DOE is not including a smaller required sample size in this final rule.

For the reasons discussed in the October 2022 NOPR and in the preceding paragraphs, in this final rule, DOE is establishing in 10 CFR 429.76 the requirements for represented values and sampling plans that were proposed in the October 2022 NOPR. DOE is also updating paragraphs (a) and (b)(1) in 10 CFR 429.11, which lists the general sampling requirements for selecting units to be tested, to change the referenced sections from “10 CFR 429.14 through 10 CFR 429.69” to “10 CFR 429.14 through 10 CFR 429.69 and 10 CFR 429.76.”

#### F. Test Procedure Costs

Use of the DOE test procedure established in this final rule will not be required for use until new energy conservation standards are established, if they are established. As a result, this test procedure will not in itself impose any costs on any manufacturers. Although use of the test procedure is not required as a result of this test procedure final rule, DOE has undertaken a study of the costs of testing a portable electric spa in the event of new energy conservation standards.

In the October 2022 NOPR, DOE estimated the per-test cost for third-party laboratory testing of portable electric spas according to the current industry consensus test procedure, ANSI/APSP/ICC-14 2019, to be \$5,000 for standard and inflatable spas, \$9,000 for exercise spas, and \$11,000 for combination spas. 87 FR 63356, 63370. In the October 2022 NOPR, DOE estimated the per-unit test cost for third-party lab testing according to the proposed DOE test procedure to be approximately the same except for an additional \$150 per test to account for the purchase of equipment to control



ambient temperature. In this final rule, DOE has adjusted the test procedure, factoring in public comments that will be discussed further in the remainder of this section, to no longer require the use of this equipment. Accordingly, DOE expects per-unit test costs to be the same as the existing industry consensus test procedure. Two units will need to be tested per basic model to certify compliance under this test procedure. Although ANSI/APSP/ICC-14 2019 does not specify the number of units of a basic model that need to be tested, DOE generally requires that at least two units be tested to certify compliance with energy conservation standards (*see* 10 CFR 429.11(b)) to ensure that such determinations of compliance are representative of actual basic model performance and is finalizing that requirement in this final rule. Additionally, this final rule includes a requirement that testing be conducted on a raised wood deck rather than a foam bed (which is used in the industry test procedure). DOE expects the total cost of constructing this new flooring would be \$877.01 per test station.<sup>35</sup>

In response to the October 2022 NOPR, commenters expressed concern for the financial burden that would ensue by deviating from the ANSI/APSP/ICC-14 2019 test procedure. The Texas A&M Students noted that increased cost for companies would result in higher cost to consumers, but that is not too concerning because spas are a luxury item. (Texas A&M Students, No. 4 at pp. 1–2) PHTA/IHTA commented that retesting all ANSI/APSP/ICC-14 2019 compliant products would cost a minimum of \$5,000 per portable electric spa and more for exercise spas. (PHTA/IHTA, No. 10 at p. 18) PHTA/IHTA argued that the \$150 increase for equipment to control ambient temperature described by DOE does not consider retesting, and that the number of models that would need to be retested is likely undervalued because manufacturers may be selling portable electric spas in states noncompliant with CA Title 20. (*Id.*) Watkins also expressed concern for the significant financial burden that would result from deviation from ANSI/APSP/ICC-14 2019. (Watkins, No. 14 at p. 2)

Regarding retesting portable electric spas, Master Spas commented that

testing every spa twice would cause immense burden, and that even with advanced testing capacities, retesting would still take about 60 weeks. (Master Spas, No. 7 at p. 3) Master Spas added that most labs do not have such testing capacities, which means their testing would take much longer, and retesting would be burdensome to the spa industry. (*Id.*) Because the industry cannot afford to lose time, Master Spas urged DOE to consider special exceptions for testing models twice. (*Id.*) PHTA/IHTA commented that retesting due to the proposed changes in ambient temperature, normalization, and chamber floor requirements in the October 2022 NOPR would incur millions of dollars in expenses with no significant increase in energy efficiency and could make costs to consumers higher. (PHTA/IHTA, No. 7 at pp. 3–4) PHTA/IHTA mentioned collaborating on CA Title 20 regulation and CSA C374:11 (R2021)<sup>36</sup> and said that there is currently not enough testing data on the proposed changes to the test procedure to prove these changes will produce a net benefit. (*Id.*) Master Spas agreed that retesting would cost millions and that there is a lack of existing data, which would require additional trial and error testing. (Master Spas, No. 7 at p. 3) PHTA/IHTA also commented that any substantive changes would require additional data analysis, as data mentioned in the October 2022 NOPR was not made available. (PHTA/IHTA, No. 7 at p. 4)

In response to these comments, DOE notes that many of DOE's proposals in the October 2022 NOPR, specifically those regarding ambient temperature, normalization, and floor conditions, would have required retesting and imposed further burden on manufacturers in the event of new energy conservation standards. However, DOE has accounted for this potential burden in this final rule and modified its final proposal to mitigate unnecessary time and financial burden. These modifications are discussed in more detail in sections III.D.3 and III.D.4 of this final rule.

In finalizing this test procedure, DOE finds that the testing of two units per basic model, including the retesting of models previously tested under the industry test procedure, is necessary for appropriate representativeness. As stated, use of the test procedure established in this final rule will not be required for use until the compliance

date of any new energy conservation standards for portable electric spas, if such standards are finalized. DOE expects that the time period until any energy conservation standards on these products would allow sufficient time for manufacturers to conduct testing. Additionally, application of the basic model provisions, as discussed in section III.E.1 of this document, would limit the number of individual models manufacturers would be required to test to make representations of efficiency.

In regard to possible impacts on consumers associated with this test procedure, DOE does not expect that these increased test costs for manufacturers will lead to significantly higher prices for consumers. Commenters are correct that, if energy conservation standards are finalized, test costs across the industry would constitute several millions of dollars—however, additional costs related to a given model are very small relative to overall production costs associated with that model and would not justify a significant increase to its selling price. DOE expects that the finalized test procedure will produce more representative efficiency metrics that consumers can use to inform purchasing choices to their benefit as well as better support compliance with potential energy conservation standards. Costs associated with this test procedure will be part of the cost-benefit analysis conducted for potential energy conservation standards, which DOE uses to evaluate whether potential standards are economically justified.

#### G. Effective and Compliance Dates

The effective date for the prescribed test procedure will be 30 days after publication of this final rule in the **Federal Register**.

EPCA prescribes that all representations of energy efficiency and energy use, including those made on marketing materials and product labels, must be made in accordance with an amended or new test procedure, beginning 180 days after publication of the final rule in the **Federal Register**. (42 U.S.C. 6293(c)(2)) To the extent the test procedure established in this final rule is required only for the evaluation and issuance of new efficiency standards, compliance with the test procedure does not require use of such test procedure until the compliance date of new standards.

For portable electric spas, all representations of energy efficiency and energy use, including those made on marketing materials and product labels, must be made in accordance with the test procedure in this final rule,

<sup>35</sup> DOE expects that the required materials would consist of 77 10 ft 2 x 6 wooden beams, for a cost of \$8.95 each, and decking screws costing \$22.94. Labor costs are expected to be four hours at a rate of \$41.23 (national median wage of a mechanical engineering technician is 29.07, wages account for 70.5 percent of total employment costs). All together, these supplies and labor (\$8.95 \* 77 + \$22.94 + \$41.23 \* 4) equal \$877.01.

<sup>36</sup> The standard CSA 374:11 (R2021) was referred to as CAN/CSA-C374-11 or CAN/CSA-C374-11 (R2021) by PHTA/IHTA and was referred to as CAN/CSA-C374-11 (R2021) in the October 2022 NOPR.

beginning on the compliance date of any Federal energy conservation standards for portable electric spas.

DOE is specifying a compliance date later than 180 days after the publication of the final rule in the **Federal Register** because several States have test procedures and energy conservation standards in place for portable electric spas. The test procedure in this final rule establishes measures of energy consumption that are different than those currently used by States. As a result, compliance with the DOE test procedure would require all State programs to be adjusted to use the measures of energy consumption in the DOE test procedure.

By requiring compliance with the DOE test procedure beginning on the compliance date of any Federal energy conservation standards for portable electric spas, DOE is avoiding the necessity for State programs to be adjusted to use the measures of energy consumption in the DOE test procedure. This compliance date also provides States and manufacturers additional time to adjust to the new rating method in the DOE test procedure and to align all changes with the compliance date of any Federal energy conservation standards. In addition, the extended compliance date will alleviate the potential burden, raised by some commenters in response to the October 2022 NOPR, for manufacturers to test a large number of models within a short duration with limited testing facilities.

#### IV. Procedural Issues and Regulatory Review

##### A. Review Under Executive Orders 12866, 13563, and 14904

Executive Order (“E.O.”) 12866, “Regulatory Planning and Review,” as supplemented and reaffirmed by E.O. 13563, “Improving Regulation and Regulatory Review,” 76 FR 3821 (Jan. 21, 2011) and amended by E.O. 14094, “Modernizing Regulatory Review,” 88 FR 21879 (April 11, 2023), requires agencies, to the extent permitted by law, to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental,

public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, the Office of Information and Regulatory Affairs (“OIRA”) in the Office of Management and Budget (“OMB”) has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in this preamble, this final regulatory action is consistent with these principles.

Section 6(a) of E.O. 12866 also requires agencies to submit “significant regulatory actions” to OIRA for review. OIRA has determined that this final regulatory action does not constitute a “significant regulatory action” under section 3(f) of E.O. 12866. Accordingly, this action was not submitted to OIRA for review under E.O. 12866.

##### B. Review Under the Regulatory Flexibility Act

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

As noted in section III.F of this document, no mandatory costs will be incurred by any manufacturers as a result of this final rule. Use of the test procedure would not be required until the compliance date of any new energy conservation standards established for portable electric spas. Therefore, DOE concludes that the impacts of the test procedure in this final rule would not have a “significant economic impact on a substantial number of small entities,” and that the preparation of a FRFA is not warranted. DOE will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

Despite a FRFA not being required, in the following sections, DOE has conducted an analysis of the cost impacts to small businesses associated with this test procedure in the event of any new energy conservation standards for portable electric spas.

##### 1. Description and Estimate of Small Entities Regulated

DOE uses the Small Business Administration (“SBA”) small business size standards to determine whether manufacturers qualify as “small businesses,” which are listed by the North American Industry Classification System (“NAICS”).<sup>37</sup> The SBA considers a business entity to be a small business if, together with its affiliates, it employs less than a threshold number of workers specified in 13 CFR part 121.

Portable electric spa manufacturers, who produce the products covered by this final rule, are classified under NAICS code 333414, “Heating Equipment (except Warm Air Furnaces) Manufacturing.” In 13 CFR 121.201, the SBA sets a threshold of 500 employees or fewer for an entity to be considered as a small business in this category. This employee threshold includes all employees in a business’s parent company and any other subsidiaries. DOE used available public information, such as the MAEDbS, to identify potential manufacturers. Once DOE created a list of potential manufacturers, DOE used market research tools to determine whether any met the SBA’s definition of a small entity.

DOE identified 28 companies potentially manufacturing portable electric spas covered by this test procedure. DOE screened out companies that do not meet the small entity definition and, additionally, screened out companies that are largely or

<sup>37</sup> Available at: [www.sba.gov/document/support-table-size-standards](http://www.sba.gov/document/support-table-size-standards).

entirely foreign owned and operated. Of the 28 companies, 14 were identified as a small business. Each of these small businesses were further identified—through a review of their websites and online documentation—to be original equipment manufacturers manufacturing covered portable electric spas as opposed to rebranding spas, integrating the spas into some broader product offering, or producing spas for strictly commercial applications.

## 2. Description and Estimate of Compliance Requirements

DOE's test procedure is largely consistent with the current industry consensus test method ANSI/APSP/ICC-14 2019. As such, DOE anticipates that this final rule will be unlikely to significantly increase existing per-unit test burden given that DOE is referencing the prevailing industry test procedure. However, this test procedure does require two tests per basic model, which would be a substantial cost

increase, as well as requiring tests to be conducted on decking rather than a foam pad—in the event energy conservation standards are established.

Commenting on the October 2022 NOPR, the Texas A&M Students stated that companies may have to pay anywhere from \$5,000–\$11,150 to retest spas, and though that may not be a huge burden to large companies, it would be a burden for smaller companies. (Texas A&M Students, No. 4 at pp. 1–2) However, the Texas A&M Students noted that the cost would be somewhat mitigated because many States already have many of the proposed changes and tests in place. (*Id.* at p. 2)

DOE agrees that costs imposed by the test procedure may be relatively higher for small manufacturers than large manufacturers. Still, DOE does not expect these costs to be a significant burden to small manufacturers. In the following paragraph and table, DOE reviews the estimated test costs for each identified small business and places

those test costs in terms of the businesses estimated revenue.

DOE understands that most portable electric spa manufacturers elect to test units at a third-party testing facility. DOE estimates the per unit model test costs for third-party lab testing to be \$5,000 for standard and inflatable spas, \$9,000 for exercise spas, and \$11,000 for combination spas. In the table below, DOE provides estimates of the possible cost impacts (based on estimated basic model counts from MAEDbS) for each small business, estimated small business revenue, and those costs as a percentage of revenue. The cost to build decking for the purposes of the test is included on the assumption that a small business will need to cover the cost of decking for one testing station—estimated to total \$877.01. On average, estimated testing costs represent 1.2 percent of annual revenue for a given small business.

TABLE IV.1—ESTIMATED TESTING BURDEN FOR SMALL, DOMESTIC MANUFACTURERS

Manufacturer	Estimated testing burden (2022\$m)	Annual revenue (2022\$m)	Percent of annual revenue (%)
Manufacturer A .....	0.16	51.4	0.3
Manufacturer B .....	0.01	10.3	0.1
Manufacturer C .....	0.12	29.6	0.4
Manufacturer D .....	0.05	0.6	8.5
Manufacturer E .....	0.03	111	0.0
Manufacturer F .....	0.28	62.0	0.5
Manufacturer G .....	0.34	27.0	1.3
Manufacturer H .....	0.12	20.0	0.6
Manufacturer I .....	0.14	7.52	1.9
Manufacturer J .....	0.04	23.7	0.2
Manufacturer K .....	0.04	40.0	0.1
Manufacturer L .....	0.09	12.7	0.7
Manufacturer M .....	0.06	7.73	0.8
Manufacturer N .....	0.02	2.19	1.0

Based on this analysis, DOE does not expect the testing costs to be a significant burden to small manufacturers.

### C. Review Under the Paperwork Reduction Act of 1995

Although no energy conservation standards have been established for portable electric spas as of the publication of this final rule, manufacturers of portable electric spas would need to certify to DOE that their products comply with any potential future applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, including any amendments adopted for those test procedures. DOE has established

regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment. (*See generally* 10 CFR part 429.) The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act ("PRA"). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

Certification data will be required for portable electric spas once any energy

conservation standards have been established for portable electric spas; however, DOE is not establishing certification or reporting requirements for portable electric spas in this final rule. Instead, DOE may consider proposals to establish certification requirements and reporting for portable electric spas under a separate rulemaking regarding appliance and equipment certification. DOE will address changes to OMB Control Number 1910–1400 at that time, as necessary.

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 establishes a test procedure that it expects will be used to develop and implement future energy conservation standards for portable electric spas. 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, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR part 1021, appendix A to subpart D, A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

#### *E. Review Under Executive Order 13132*

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. For the reasons described below, DOE has examined this final rule and has determined that this rule meets the relevant standards of E.O. 13132.

E.O. 13132 includes special requirements for preemption, including that Federal agencies must only construe a Federal statute to preempt State law where the statute includes express preemption or some other clear evidence that Congress intended preemption of State law, or where the exercise of State authority conflicts with the exercise of Federal authority under the Federal statute. Federal energy efficiency requirements for covered products established under EPCA generally supersede State laws and regulations concerning energy

conservation testing, labeling, and standards. (42 U.S.C. 6297) As such, any State regulation regarding portable electric spa testing will be preempted on the compliance dates listed in the **DATES** section. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6316(a) and (b); 42 U.S.C. 6297)

#### *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 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)) UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at [www.energy.gov/gc/office-general-counsel](http://www.energy.gov/gc/office-general-counsel). DOE examined this 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. This 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). Pursuant to OMB Memorandum M–19–15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at [www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IA%20Guidelines%20Dec%202019.pdf](http://www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IA%20Guidelines%20Dec%202019.pdf). DOE has reviewed this 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.

This final 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 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the

public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (“FTC”) concerning the impact of the commercial or industry standards on competition.

The test procedure for portable electric spas adopted in this final rule incorporates testing methods contained in certain sections of the following commercial standards: Pool & Hot Tub Alliance ANSI/APSP/ICC–14 2019, “American National Standard for Portable Electric Spa Energy Efficiency,” and CSA C374:11 (R2021) “Energy performance of hot tubs and spas.” DOE has evaluated these standards and is unable to conclude whether they fully comply with the requirements of section 32(b) of the FEAA (*i.e.*, whether they were developed in a manner that fully provides for public participation, comment, and review.) 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 this 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).

#### N. Description of Materials Incorporated by Reference

ANSI/APSP/ICC–14 2019 and CSA C374:11 (R2021) are industry-accepted test standards that specify methods for measuring the energy efficiency of portable electric spas that differ in certain installation requirements.

Specifically, the test procedure codified by this final rule references ANSI/APSP/ICC–14 2019 for measuring the energy efficiency of portable electric spas. ANSI/APSP/ICC–14 2019 is reasonably available from PHTA ([www.phta.org](http://www.phta.org)).

Specifically, the test procedure codified by this final rule references CSA C374:11 (R2021) for specifying the platform on which to install portable electric spas during testing. CSA C374:11 (R2021) is reasonably available from the CSA Group ([www.csagroup.org](http://www.csagroup.org)).

#### V. Approval of the Office of the Secretary

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

#### List of Subjects

##### 10 CFR Part 429

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Intergovernmental relations, Reporting and recordkeeping requirements, Small businesses.

##### 10 CFR Part 430

Administrative practice and procedure, Confidential business information, Energy conservation, Household appliances, Imports, Incorporation by reference, Intergovernmental relations, Small businesses.

#### Signing Authority

This document of the Department of Energy was signed on May 30, 2023, by Francisco Alejandro Moreno, Acting Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on May 30, 2023.

**Treena V. Garrett,**

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

For the reasons stated in the preamble, DOE amends parts 429 and 430 of Chapter II of Title 10, Code of Federal Regulations as set forth below:

#### **PART 429—CERTIFICATION, COMPLIANCE, AND ENFORCEMENT FOR CONSUMER PRODUCTS AND COMMERCIAL AND INDUSTRIAL EQUIPMENT**

■ 1. The authority citation for part 429 continues to read as follows:

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

##### **§ 429.11 [Amended]**

■ 2. Amend paragraphs (a) and (b)(1) by removing the text “§§ 429.14 through 429.69” and adding in its place “§§ 429.14 through 429.69 and § 429.76”.

- 3. Add § 429.76 to subpart B to read as follows:

**§ 429.76 Portable electric spas.**

(a) *Determination of represented values.* Manufacturers must determine the represented values for each basic model of portable electric spas by testing in conjunction with the following provisions.

(1) For spa covers:

(i) If a basic model is distributed in commerce with multiple covers designated by the spa manufacturer for use with the basic model, a manufacturer must determine all represented values for that basic model based on the cover that results in the highest standby loss, except that the manufacturer may choose to identify specific individual combinations of spa and cover as additional basic models.

(ii) If a basic model is distributed in commerce with no cover designated by the spa manufacturer for use with the basic model, a manufacturer must determine all represented values for that basic model by testing as specified in section 3.1.5.2 of appendix GG to subpart B of this part.

(2) The sampling requirements of § 429.11 are applicable to portable electric spas; and

(3) For each basic model of portable electric spas, a sample of sufficient size must be randomly selected and tested to ensure that any representation of standby loss or other measure of energy consumption of a basic model for which consumers would favor lower values shall be greater than or equal to the higher of:

(i) The mean of the sample, where:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

and  $\bar{x}$  is the sample mean,  $n$  is the number of samples, and  $x_i$  is the  $i^{\text{th}}$  sample; or,

(ii) The upper 95 percent confidence limit (UCL) of the true mean divided by 1.05, where:

$$UCL = \bar{x} + t_{0.95} \left( \frac{s}{\sqrt{n}} \right)$$

and  $\bar{x}$  is the sample mean,  $s$  is the sample standard deviation,  $n$  is the number of samples, and  $t_{0.95}$  is the  $t$  statistic for a 95 percent one-tailed confidence interval with  $n-1$  degrees of freedom (from appendix A of subpart B of part 429).

(4) The represented value of standby loss must be a whole number of watts.

(5) The represented value of fill volume of a basic model must be a

whole number of gallons that is within 5 gallons of the mean of the fill volumes measured for the units in the sample selected as described in paragraph (a)(3) of this section.

(b) [Reserved]

**PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS**

- 4. The authority citation for part 430 continues to read as follows:

**Authority:** 42 U.S.C. 6291–6309; 28 U.S.C. 2461 note.

- 5. Amend § 430.3 by:

■ a. Revising paragraph (a);

■ b. Revising paragraph (k) introductory text;

■ c. Adding paragraph (k)(2);

■ d. Redesignating paragraphs (w) through (x) as paragraphs (x) through (y); and

■ e. Adding a new paragraph (w).

The revision and additions read as follows:

**§ 430.3 Materials incorporated by reference.**

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the U.S. Department of Energy (DOE) must publish a document in the **Federal Register** and the material must be available to the public. All approved incorporation by reference (IBR) material is available for inspection at DOE and at the National Archives and Records Administration (NARA).

Contact DOE at: The U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Program, 1000 Independence Ave. SW, EE-5B, Washington, DC 20585, (202) 586-9127, [Buildings@ee.doe.gov](mailto:Buildings@ee.doe.gov), <https://www.energy.gov/eere/buildings/appliance-and-equipment-standards-program>. For information on the availability of this material at NARA, visit [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html) or email [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov). The material may be obtained from the sources in the following paragraphs of this section.

\* \* \* \* \*

(k) CSA. CSA Group, 178 Rexdale Blvd., Toronto, ON, Canada M9W 1R3, 1-800-463-6727 or 416-747-4044, [www.csagroup.org](http://www.csagroup.org).

\* \* \* \* \*

(2) CSA C374:11 (R2021), Energy performance of hot tubs and spas, published November 2011, Update No.

1—National Standard of Canada—April 2012; IBR approved for appendix GG to subpart B of this part.

\* \* \* \* \*

(w) PHTA. Pool & Hot Tub Alliance, 2111 Eisenhower Avenue, Suite 500, Alexandria, VA 22314 ([www.phta.org](http://www.phta.org)), (703) 838-0083.

(1) ANSI/APSP/ICC-14 2019, American National Standard for Portable Electric Spa Energy Efficiency, ANSI-approved November 19, 2019; IBR approved for appendix GG to subpart B of this part.

(2) [Reserved]

\* \* \* \* \*

- 6. Amend § 430.23 by adding a new paragraph (ii) to read as follows:

**§ 430.23 Test procedures for the measurement of energy and water consumption.**

\* \* \* \* \*

(ii) *Portable electric spas.* Measure the standby loss in watts and the fill volume in gallons of a portable electric spa in accordance with appendix GG to this subpart.

- 6. Add appendix GG to subpart B of part 430 to read as follows:

**Appendix GG to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Portable Electric Spas**

**Note:** Beginning on the compliance date of any energy conservation standards for portable electric spas specified in § 430.32, all representations of fill volume, energy efficiency, and energy use of portable electric spas, including those made on marketing materials and product labels, must be made in accordance with this test procedure.

**0. Incorporation by Reference**

DOE incorporated by reference in § 430.3, the entire standard for ANSI/APSP/ICC-14 2019 and CSA C374:11 (R2021). However, only enumerated provisions of ANSI/APSP/ICC-14 2019 and CSA C374:11 (R2021), as listed in this section 0 are required. To the extent there is a conflict between the terms or provisions of a referenced industry standard and the CFR, the CFR provisions control. Non-enumerated provisions of ANSI/APSP/ICC-14 2019 are specifically excluded.

**0.1. ANSI/APSP/ICC-14 2019**

(a) Section 3—Definitions (excluding the definitions for *cover*, *specified*, *fill volume*, *rated volume*, and *standby mode*), as specified in section 2.1 of this appendix;

(b) Section 5—Test Method (excluding Sections 5.1, 5.2, 5.5.2, 5.5.4, 5.5.5, and 5.7), as specified in sections 3, 3.1.6, 3.2.2, and 3.2.3 of this appendix;

(c) Appendix A—Minimum Chamber Requirements (excluding section titled *Chamber floor*), as specified in section 3.1.1 of this appendix.

**0.2. CSA C374:11 (R2021)**

(a) Clause 5.1.1—Test room, as specified in section 3.1.2 of this appendix;

(b) Figure 1—Test platform, as specified in section 3.1.2 of this appendix.

### 1. Scope

This appendix provides the test procedure for measuring the standby loss in watts and the fill volume in gallons of portable electric spas.

### 2. Definitions

2.1. Section 3, Definitions, of ANSI/APSP/ICC-14 2019 applies to this test procedure. In case of conflicting terms between ANSI/APSP/ICC-14 2019 and DOE's definitions in this appendix or in § 430.2, DOE's definitions take priority.

2.2. *Combination spa* means a portable electric spa with two separate and distinct reservoirs, where—

- (a) One reservoir is an exercise spa;
- (b) The second reservoir is a standard spa; and
- (c) Each reservoir has an independent water temperature setting control.

2.3. *Exercise spa* means a variant of a portable electric spa in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. An exercise spa is also known as a swim spa.

2.4. *Exercise spa portion* means the reservoir of a combination spa that is an exercise spa.

2.5. *Fill volume* means the volume of water held by the portable electric spa when it is filled as specified in section 3.1.4 of this appendix.

2.6. *Inflatable spa* means a portable electric spa where the structure is collapsible and is designed to be filled with air to form the body of the spa.

2.7. *Standard spa* means a portable electric spa that is not an inflatable spa, an exercise spa, or the exercise spa portion of a combination spa.

2.8. *Standard spa portion* means the reservoir of a combination spa that is a standard spa.

2.9. *Standby loss* means the mean normalized power required to operate the portable electric spa in default operation mode with the cover on, as calculated in section 3.3 of this appendix.

### 3. Test Method

Determine the standby loss in watts and fill volume in gallons for portable electric spas in accordance with section 5, *Test Method*, of ANSI/APSP/ICC-14 2019, except as follows.

#### 3.1. Test Setup

##### 3.1.1. Chamber

Install the portable electric spa in a chamber satisfying the requirements specified for *Chamber internal dimensions*,

*Air flow*, and *Chamber insulation* in appendix A, *Minimum Chamber Requirements*, to ANSI/APSP/ICC-14 2019.

##### 3.1.2. Chamber Floor

Install the portable electric spa on a platform as specified in Clause 5.1.1(b) and Figure 1 of CSA C374:11 (R2021).

##### 3.1.3. Electrical Supply Voltage and Amperage Configuration

###### 3.1.3.1. General

If the portable electric spa can be installed or configured with multiple options of voltage, maximum amperage, or both, use the hierarchy in section 3.1.3.2 of this appendix to determine the configuration for testing.

###### 3.1.3.2. Hierarchy

Use the as-shipped configuration, if such a configuration is provided.

If no configuration is provided in the as-shipped condition, use the option specified in the manufacturer's instructions as the recommended configuration for normal consumer use.

If no configuration is provided in the as-shipped condition and the manufacturer's instructions do not provide a recommended configuration for normal consumer use, use the maximum voltage specified in the manufacturer's installation instructions and maximum amperage that the manufacturer's installation instructions specify for use with the maximum voltage.

##### 3.1.4. Fill Volume

Follow the manufacturer's instructions for filling the portable electric spa with water, connecting and/or priming the pump(s), and starting up the spa. After verifying that the spa is operating normally and that all water lines are filled, power off the spa and adjust the fill level as needed to meet the following specifications before starting the test.

If the manufacturer's instructions specify a single fill level, fill to that level with a tolerance of  $\pm 0.125$  inches.

If the manufacturer's instructions specify a range of fill levels and not a single fill level, fill to the middle of that range with a tolerance of  $\pm 0.125$  inches.

If the manufacturer's instructions do not specify a fill level or range of fill levels, fill to the halfway point between the bottom of the skimmer opening and the top of the skimmer opening with a tolerance of  $\pm 0.125$  inches.

If the manufacturer's instructions do not specify a fill level or range of fill levels, and there is no wall skimmer, fill to 6.0 inches  $\pm 0.125$  inches below the overflow level of the spa.

Measure the volume of water added to the spa with a water meter while filling the spa. Measure any water removed from the spa using a water meter, graduated container, or scale, each with an accuracy of  $\pm 2$  percent of the quantity measured. The fill volume is the

volume of water held by the spa when the spa is filled as specified above.

##### 3.1.5. Spa Cover

###### 3.1.5.1. Cover Is Designated by the Spa Manufacturer

Install the spa cover following the manufacturer's instructions.

###### 3.1.5.2. No Cover Is Designated by the Spa Manufacturer

If no cover is designated by the spa manufacturer for use with the spa, cover the portable electric spa with a single layer of 6 mil thickness (0.006 inches; 0.15 mm) plastic film. Cut the plastic to cover the entire top surface of the spa and extend over the edge of the spa approximately 6 inches below the top surface of the spa. Use fasteners or weights to keep the plastic in place during the test, but do not seal the edges of the plastic to the spa (by using tape, for example).

##### 3.1.6. Ambient Temperature Measurement Location

The ambient air temperature measurement point specified in section 5.6.3 of ANSI/APSP/ICC-14 2019 must be located above the center of the spa.

### 3.2. Test Conditions and Conduct

#### 3.2.1. Ambient Air Temperature

Maintain the ambient air temperature at a maximum of 63.0 °F for the duration of the test. This requirement applies to each individual ambient air temperature measurement taken for the duration of the stabilization period and test period.

#### 3.2.2. Water Temperature Settings

Adjust the spa water temperature settings to meet the applicable temperature requirements in section 5.6.1 of ANSI/APSP/ICC-14 2019. The spa water temperature settings must not be adjusted between the start of the stabilizing period specified in section 5.6.1 of ANSI/APSP/ICC-14 2019 and the end of the test period specified in section 5.6.4.7 of ANSI/APSP/ICC-14 2019.

#### 3.2.3. Water Temperature Requirements

Each individual water temperature measurement taken during the stabilization period and test period must meet the applicable water temperature requirements specified in section 5.6.1 of ANSI/APSP/ICC-14 2019.

### 3.3. Standby Loss Calculation

Calculate standby loss in watts by calculating the measured standby loss using Equation 1 of this appendix, calculating the measured temperature difference using Equation 2 of this appendix, and normalizing the standby loss using Equation 3 of this appendix. Use the standby loss calculated in Equation 3 as the standby loss value for the test.



**Equation 1**

$$SL_{meas} = \frac{E}{t}$$

**Equation 2**

$$\Delta T_{meas} = T_{water\ avg} - T_{air\ avg}$$

**Equation 3**

$$SL = SL_{meas} \times \frac{\Delta T_{std}}{\Delta T_{meas}}$$

Where:

SL<sub>meas</sub> = Measured standby loss (watts)

E = Total energy use during the test (watt-hours)

t = Length of test (hours)

ΔT<sub>meas</sub> = Measured temperature difference (°F)

T<sub>water avg</sub> = Average water temperature during test (°F)

T<sub>air avg</sub> = Average air temperature during test (°F)

SL = Standby loss (W)

ΔT<sub>std</sub> = Normalized temperature difference (°F), as follows:

46.0 °F for all inflatable spas, standard spas, standard spa portions of a combination spa, exercise spas, and exercise spa portions of a combination spa tested to a minimum

water temperature of 100 °F; or 31.0 °F for all exercise spas or exercise spa portions of a combination spa tested to a minimum water temperature of 85 °F.

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