

Appliance Standards Awareness Project
American Council for an Energy-Efficient Economy
Natural Resources Defense Council
New York State Energy Research and Development Authority
Northwest Energy Efficiency Alliance

December 19, 2022

Mr. Jeremy Dommu
U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
Building Technologies Office, EE-2J
1000 Independence Avenue SW
Washington, DC 20585

RE: Docket Number EERE-2022-BT-TP-0024: Test Procedures for Portable Electric Spas

Dear Mr. Dommu:

This letter constitutes the comments of the Appliance Standards Awareness Project (ASAP), American Council for an Energy-Efficient Economy (ACEEE), Natural Resources Defense Council (NRDC), New York State Energy Research and Development Authority (NYSERDA), and the Northwest Energy Efficiency Alliance (NEEA) on the notice of proposed rulemaking (NOPR) for test procedures for portable electric spas. 87 Fed. Reg. 63356 (October 18, 2022). We appreciate the opportunity to provide input to the Department.

While 13 states have adopted standards for portable electric spas (PESs), PESs are not currently subject to DOE test procedures or standards. We are therefore pleased that DOE has advanced this rulemaking by publishing a test procedures NOPR. We are generally supportive of the Department's proposals, including the additional testing specifications regarding electrical configurations, testing for PESs without manufacturer-specified covers, and fill volume. We also support DOE in their investigation to explore the impact of chamber floor insulation on measured standby loss.

We support DOE's investigation into the impact of chamber floor insulation on measured standby loss. DOE's proposed test procedure is based largely on the industry procedure, ANSI/APSP/ICC-14 2019, which specifies that the test chamber floor be covered with 2 inches of insulation sheathed with at least 0.5 inches of plywood. However, DOE notes in the NOPR that most spa manuals specify preferred installation directly on concrete and that none specify installing insulation under the spa.¹ Crucially, preliminary testing presented in the NOPR suggests that exclusion of chamber floor insulation can have a significant impact on measured energy use. Specifically, DOE presented results for two spas which showed that Spa 1 has measured standby loss using ANSI/APSP/ICC-14-2019 only 4% higher than that of Spa 2. However, when these same spas were tested with no floor insulation (i.e., on concrete), the measured standby loss of Spa 1 was 45% higher than that of Spa 2.² This difference is likely attributable to Spa 1 having poor floor insulation relative to Spa 2; increased standby loss due to poor floor

¹87 Fed. Reg. 63364.

²Spa 1 standby loss increased from 213 W with floor insulation to 339 W without insulation, an increase of 126 W; Spa 2 standby loss increased from 204 W to 233 W, an increase of 29 W.

insulation would not be fully captured in the industry test procedure due to the presence of the additional floor insulation under the spa.³ Thus, DOE is proposing to specify in Appendix GG that spas may only be tested with floor insulation if the insulation is provided with the spa and the installation instructions specify its use. We agree with DOE that these preliminary test results suggest use of chamber floor insulation may result in unrepresentative standby loss ratings, and we support DOE's efforts to ensure that the test procedure is representative.

We support DOE's additional proposed specifications regarding testing electrical voltage and current.

ANSI/APSP/ICC-14 2019 specifies that the test supply voltage be within 10% of the nameplate voltage during testing but has no additional specifications regarding voltage or amperage configurations. Some PESs are operable at both 120 and 240 V and/or allow the consumer to configure the maximum amperage at a given voltage. DOE notes in the NOPR that both supply voltage and maximum amperage may affect measured energy usage.⁴ Thus, DOE has proposed a hierarchy for testing these parameters to provide clearer instructions for PESs with multiple voltage/amperage configurations.⁵ We support these additional proposed specifications as they will help ensure the test procedure is both representative and reproducible.

We support DOE's additional proposed specifications regarding spa fill volume. ANSI/APSP/ICC-14 2019 specifies two quantities for PES water volume: fill volume and rated volume. Fill volume is the volume of water used for testing, while rated volume is the reported spa capacity based on manufacturer literature. In the NOPR, DOE notes that while fill volume and rated volume are very similar or equal for many models, there is a significant difference for others.⁶ Since the volume of water in a spa can affect its energy usage, DOE has tentatively proposed additional specifications to ensure the volume used in testing is representative. Specifically, DOE is proposing a spa filling instruction hierarchy⁷ that should help ensure the fill level used in testing is representative of the fill level used in the real-world. We support these proposed filling instructions as they will help ensure that the fill volume used in testing is representative.

We support DOE's proposed specifications regarding spas without a manufacturer-specified cover.

ANSI/APSP/ICC-14 2019 requires that the manufacturer's specified cover be used for testing. However, there are no clear testing instructions for when a manufacturer does not specify a cover for sale with a spa. For spas without a specified cover, DOE is thus proposing that the spa be covered with a single layer of 6 mil plastic film for testing.⁸ We believe this proposal would help ensure that testing of spas without

³Heat conduction is inversely proportional to R-value. DOE's recent notice of data availability for PES standards estimates that spas at the baseline and at efficiency level (EL) 1 have R-10 and R-13.5 of floor insulation, respectively. This corresponds to an approximately 35% decrease $[(13.5 - 10)/10]$ in heat loss through the floor for an EL 1 spa. However, adding 2" polyisocyanurate insulation (R-13) for both reduces the impact of the additional R-3.5 of floor insulation at EL 1, decreasing heat loss by only about 15% $[(26.5 - 23)/23]$.

⁴87 Fed. Reg. 63365.

⁵Proposed hierarchy: a) the as-shipped configuration, b) configuration based on manufacturer instructions recommended for normal operation, c) maximum voltage and the maximum amperage specified for that voltage.

⁶87 Fed. Reg. 63366.

⁷Proposed hierarchy: a) single fill level specified in manufacturer instructions, b) If the instructions specify a range of fill levels, fill to the middle of that range, c) fill halfway between the bottom and top of the skimmer opening, (d) fill to 6 inches below the overflow level of the spa.

⁸87 Fed. Reg. 63367.

a manufacturer-specified cover would be consistent across different testing labs and that the test procedure does not overstate the efficiency of spas sold without specified covers.

Thank you for considering these comments.

Sincerely,



Jeremy Dunklin, PhD
Technical Advocacy Associate
Appliance Standards Awareness Project



Amber Wood
Director, Buildings Program
American Council for an Energy-Efficient Economy



Joe Vukovich
Energy Efficiency Advocate
Natural Resources Defense Council



Chris Corcoran
Team Lead – Codes, Products, & Standards
New York State Energy Research and Development
Authority (NYSERDA)



Blake Ringeisen
Sr. Engineer, Codes and Standards
Northwest Energy Efficiency Alliance