6450-01-P

DEPARTMENT OF ENERGY

10 CFR Part 430

RIN 1904-AE36

Energy Conservation Program: Test Procedures for Cooking Products

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

ACTION: Final rule.

SUMMARY: On August 9, 2019, as a result of a petition from the Association of Home Appliance Manufacturers (AHAM) and data received in response to that petition, the U.S. Department of Energy (DOE) published a notice of proposed rulemaking (NOPR) proposing to withdraw the test procedure for conventional cooking tops established under the Energy Policy and Conservation Act (EPCA). In this final rule, DOE withdraws the test procedure for conventional cooking tops under EPCA. DOE has determined that the conventional cooking tops test procedure is not representative of energy use or efficiency during an average use cycle and is overly burdensome to conduct.

DATES: The effective date of this rule is **[*INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN FEDERAL REGISTER*]**. The incorporation by reference of certain publications listed in this rule was approved by the Director of the Federal Register on April 8, 2011 and December 17, 2012.

ADDRESSES: The docket is available for review at *http://www.regulations.gov*. All documents in the docket are listed in the *http://www.regulations.gov* index. However, some documents listed in the index may not be publicly available, such as those containing information that is exempt from public disclosure.

The docket web page can be found at*: http://www.regulations.gov/docket?D=EERE-2019-BT-TP-0041*. The docket web page contains simple instructions on how to access all documents in the docket.

FOR FURTHER INFORMATION CONTACT: Celia Sher, U.S. Department of Energy, Office of the General Counsel, 1000 Independence Avenue, SW., Washington, DC 20585. E-mail: *Celia.Sher@hq.doe.gov*; (202) 287-6122.

SUPPLEMENTARY INFORMATION:

DOE includes the following industry standards, previously incorporated by reference into 10 CFR part 430:

(1) International Electrotechnical Commission (IEC) Standard 62301, Household electrical appliances—Measurement of standby power," Publication 62301 (First Edition 2005-06).

(2) IEC 62301 Household electrical appliances—Measurement of standby power, (Edition 2.0 2011-01).

Copies of IEC 62301 (First Edition) and IEC 62301 (Second Edition) can be obtained from the American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036, (212) 642-4900, or go to *http://webstore.ansi.org.*

See Section IV.M. for a further discussion of these standards.

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I. Authority and Background

Kitchen ranges and ovens are included in the list of "covered products" for which DOE is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6292(a)(10)) DOE's regulations at 10 CFR 430.2 include definitions for "cooking products," which cover cooking appliances that use gas, electricity, or microwave energy as the source of heat; as well as specific types of cooking products, including conventional cooking tops, conventional ovens, microwave ovens, and other cooking products. DOE's energy conservation standards and test procedures for cooking products are currently prescribed at 10 CFR 430.32(j) and 10 CFR 430.23(i), respectively. The following sections discuss DOE's authority to establish test procedures for cooking products and relevant background information regarding DOE's determination to withdraw the test procedures for conventional cooking tops.

A. Authority

Title III, Part B[1] of the Energy Policy and Conservation Act of 1975 (EPCA or the Act), Public Law 94-163 (42 U.S.C. 6291-6309, as codified), established the Energy Conservation

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

Program for Consumer Products Other Than Automobiles,[2] a program covering most major household appliances, which includes cooking products, and specifically conventional cooking tops,[3] the subject of this rule. (42 U.S.C. 6292(a)(10))

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

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

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

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[2] All references to EPCA in this document refer to the statute as amended through America's Water Infrastructure Act of 2018, Public Law 115–270 (October 23, 2018).

[3] Conventional cooking top means a class of kitchen ranges and ovens which is a household cooking appliance consisting of a horizontal surface containing one or more surface units which include either a gas flame or electric resistance heating. This includes any conventional cooking top component of a combined cooking product. 10 CFR 430.2.

burdensome to conduct. (42 U.S.C. 6293(b)(3)) DOE's test procedures for conventional cooking tops are codified at appendix I to subpart B of 10 CFR part 430 ("appendix I").

B. Background

DOE originally established test procedures for cooking products in a final rule published in the *Federal Register* on May 10, 1978. 43 FR 20108, 20120–20128. DOE revised its test procedures for cooking products to more accurately measure their efficiency and energy use, and published the revisions as a final rule in 1997. 62 FR 51976 (Oct. 3, 1997). These test procedure amendments included: (1) a reduction in the annual useful cooking energy; (2) a reduction in the number of self-clean oven cycles per year; and (3) incorporation of portions of International Electrotechnical Commission ("IEC") Standard 705-1988, "Methods for measuring the performance of microwave ovens for household and similar purposes," and Amendment 2-1993 for the testing of microwave ovens.[4] The test procedures for consumer cooking products established provisions for determining estimated annual operating cost, cooking efficiency (defined as the ratio of cooking energy output to cooking energy input), and energy factor (defined as the ratio of annual useful cooking energy output to total annual energy input) at 10 CFR 430.23(i) and appendix I. As described in the following discussion, aside from the provisions for measuring standby power of microwave ovens, all other provisions for consumer cooking products are not currently used for compliance with any energy conservation standards because the present standards are design requirements.

DOE subsequently conducted a rulemaking to address standby and off mode energy consumption, as well as certain active mode (*i.e.*, fan-only mode) testing provisions, for

[4] DOE subsequently withdrew the test procedures for measuring the active mode of microwave ovens in a July 22, 2010 final rule. 75 FR 42579. DOE has adopted test procedure provisions to measure the standby and off mode energy use of microwave ovens. *See* 78 FR 4015.

consumer conventional cooking products. DOE published a final rule on October 31, 2012 (77 FR 65942, the "October 2012 TP Final Rule"), adopting standby and off mode provisions that satisfy the EPCA requirement that DOE include measures of standby mode and off mode power in its test procedures for residential products, if technically feasible. (42 U.S.C. 6295(gg)(2)(A))

On January 30, 2013, DOE published a NOPR (78 FR 6232, the "January 2013 TP NOPR") proposing amendments to appendix I that would allow for testing the active mode energy consumption of induction cooking products; *i.e.*, conventional cooking tops equipped with induction heating technology for one or more surface units on the cooking top. DOE proposed to incorporate induction cooking tops by amending the definition of "conventional cooking top" to include induction heating technology. Furthermore, DOE proposed to require for all cooking tops the use of test equipment compatible with induction technology. Specifically, DOE proposed to replace the solid aluminum test blocks specified at that time in the test procedure for cooking tops with hybrid test blocks comprising two separate pieces: an aluminum body and a stainless steel base. 78 FR 6232, 6234 (Jan. 30, 2013).

On December 3, 2014, DOE published an SNOPR (the "December 2014 TP SNOPR"), in which DOE modified its proposal from the January 2013 TP NOPR in response to comments from interested parties to specify different test equipment that would allow for measuring the energy efficiency of induction cooking tops, and would include an additional test block size for electric surface units with large diameters (both induction and electric resistance). 79 FR 71894. In addition, DOE proposed methods to test non-circular electric surface units, electric surface units with flexible concentric cooking zones, and full-surface induction cooking tops. *Id*. In the December 2014 TP SNOPR, DOE also proposed amendments to add a larger test block size to test gas cooking top burners with higher input rates. *Id*.

In the December 2014 TP SNOPR, DOE also proposed methods for measuring conventional oven volume, clarification that the existing oven test block must be used to test all ovens regardless of input rate, and a method to measure the energy consumption and efficiency of conventional ovens equipped with an oven separator. 79 FR 71894 (Dec. 3, 2014). DOE published the July 2015 TP Final Rule adopting the test procedure amendments discussed above for conventional ovens only. 80 FR 37954.

On June 10, 2015, DOE published a NOPR (the "June 2015 NOPR") proposing new and amended energy conservation standards for consumer conventional ovens. 80 FR 33030. As discussed in the June 2015 NOPR, DOE received a significant number of comments raising issues with the repeatability and reproducibility of the proposed hybrid test block test method for cooking tops in response to the December 2014 TP SNOPR and in separate interviews conducted with consumer cooking product manufacturers in February and March of 2015. 80 FR 33030, 33039–33040 (June 10, 2015). A number of manufacturers that produce and sell products in Europe supported the use of a water-heating test method and harmonization with IEC Standard 60350-2 Edition 2, "Household electric appliances – Part 2: Hobs – Method for measuring performance" ("IEC Standard 60350-2") for measuring the energy consumption of electric cooking tops. These manufacturers stated their view that the test methods in IEC Standard 60350-2 are compatible with all electric cooking top types, specify additional cookware diameters to account for the variety of surface unit sizes on the market, and use test loads that represent real-world cooking top loads. Efficiency advocates also recommended that DOE require water-heating test methods to produce a measure of cooking efficiency for conventional cooking tops that is more representative of actual cooking performance than the hybrid test block method. 80 FR 33030, 33039–33040 (June 10, 2015). For these reasons, DOE decided to defer

its decision regarding adoption of energy conservation standards for conventional cooking tops until a representative, repeatable and reproducible test method for cooking tops was finalized. 80 FR 33030, 33040 (June 10, 2015).

DOE published an additional test procedure SNOPR on August 22, 2016 (81 FR 57374) (the "August 2016 TP SNOPR") that proposed amendments to the test procedures for conventional cooking tops. Given the feedback from interested parties discussed above and based on the additional testing and analysis conducted for the test procedure rulemaking, in the August 2016 TP SNOPR, DOE withdrew its proposal for testing conventional cooking tops with a hybrid test block. Instead, DOE proposed to amend its test procedure to incorporate by reference the relevant sections of European standard EN 60350-2:2013, which provide a water-heating test method to measure the energy consumption of electric cooking tops. The test method specifies the quantity of water to be heated in a standardized test vessel whose size is selected based on the diameter of the surface unit under test. 81 FR 57374, 57381–57384.

DOE also proposed to extend the test methods provided in EN 60530-2:2013 to measure the energy consumption of gas cooking tops by correlating test equipment diameter to burner input rate, including input rates that exceed 14,000 Btu/h. 81 FR 57374, 57385–57386. In addition, DOE also proposed in the August 2016 TP SNOPR to include methods for both electric and gas cooking tops to calculate the annual energy consumption and the integrated annual energy consumption to account for the proposed water-heating test method. 81 FR 57374, 57387–57388.

In the August 2016 TP SNOPR, DOE proposed to repeal the conventional oven test procedure. DOE determined that the conventional oven test procedure may not accurately represent consumer use, as it favored conventional ovens with low thermal mass and did not

capture cooking performance-related benefits due to increased thermal mass of the oven cavity. 81 FR 57374, 57378–57379.

On December 16, 2016, DOE published a final rule (the "December 2016 TP Final Rule") repealing the test procedures for conventional ovens for the reasons discussed, and adopting the test procedure amendments for conventional cooking tops proposed in the August 2016 TP SNOPR that, among other things: (1) incorporated by reference the relevant sections of European Standard EN 60350-2:2013, which uses a water-heating test method to measure the energy consumption of electric cooking tops; (2) extended the water-heating test method specified in EN 60350-2:2013 to gas cooking tops; and (3) clarified that the 20-minute simmering period starts when the water temperature first reaches 90 °C and does not drop below 90 °C for more than 20 seconds after initially reaching 90 °C. 81 FR 91418.

C. AHAM Petition for Reconsideration

The Administrative Procedure Act (APA), 5 U.S.C. 551 et seq., provides among other things, that "[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule." (5 U.S.C. 553(e)) DOE received a petition from AHAM requesting that DOE reconsider its December 2016 TP Final Rule. In its petition, AHAM requested that DOE undertake a rulemaking to withdraw the cooking top test procedure, while maintaining the repeal of the oven test procedure that was part of the Final Rule. In the interim, AHAM sought an immediate stay of the effectiveness of the Final Rule, including the requirement that manufacturers use the final test procedure to make energy-related claims. In its petition, AHAM claimed that its analyses showed that the test procedure adopted in the December 2016 TP Final Rule is not representative for gas cooking tops and, for gas and electric cooking tops, has such a high level of variation it will not produce accurate results for

certification and enforcement purposes and will not assist consumers in making purchasing decisions based on energy efficiency. DOE published AHAM's petition on April 25, 2018, and requested comments and information on whether DOE should undertake a rulemaking to consider the proposal contained in the petition. 80 FR 17944. Based on the review of public comments and data received in response to AHAM's petition, on August 9, 2019, DOE published a NOPR proposing to withdraw the test procedure for conventional cooking tops (the "August 2019 NOPR"). In that NOPR, DOE tentatively determined that the conventional cooking tops test procedure may not accurately represent consumer use for gas cooking tops, may not be repeatable or reproducible for both gas and electric cooking tops, and is overly burdensome to conduct. DOE held a public meeting on October 9, 2019 to hear oral comments and solicit information and data relevant to the August 2019 NOPR.

The following sections of this preamble respond to comments received on the August 2019 NOPR and during the NOPR public meeting.

II. Synopsis of Final Rule

In this rule, DOE withdraws the test procedure for conventional cooking tops because testing conducted by DOE and outside parties using that test procedure yields inconsistent results. As a result, the outcomes of such testing are unreliable and it is unduly burdensome to leave that test procedure in place and require cooking top tests be conducted using that test method without further study to resolve those inconsistencies.

III. Discussion

The current test procedure in appendix I for cooking tops measures the integrated annual energy consumption of both gas and electric cooking tops. The integrated annual energy consumption comprises active mode energy consumption of each surface unit on the cooking

top, as well as the combined low-power mode energy consumption of the cooking top. In general, to measure the active mode energy consumption of each surface unit, a specified amount of water is heated in a vessel at maximum power ("heat-up" period) until a threshold temperature is reached, and then the power is turned down such that the water is left to simmer at just above 90 degrees Centigrade (°C) for 20 minutes ("simmering" period). The active mode energy consumption is the measured energy used during the entire heat-up and simmering periods.

DOE published its August 2019 NOPR proposing to withdraw the current test procedure for conventional cooking tops as a result of testing data AHAM submitted in its petition and in subsequent comments that was inconsistent with DOE's own testing results. With respect to gas cooking tops, AHAM's round robin testing of four laboratories showed a level of lab-to-lab variation in the cooking top gas energy consumption among four different cooking top models (3.02%, 3.63%, 9.67%, and 7.99%) that AHAM stated is higher than the acceptable level of variation, which it assumed to be 2 percent. (AHAM, No. 25 at p. 4)[5] AHAM's data showed that a large contributor to this variation was the simmer portion of the test, and AHAM's investigations found that a possible cause is that the gas flow is highly sensitive to the gas burner knob position.

AHAM also asserted in the petition that DOE did not properly evaluate element cycling in electric cooking tops, which could affect the repeatability of the test procedure. (AHAM, No. 2 at p. 34) As discussed in the August 2019 NOPR, DOE conducted testing of ten electric cooking tops to investigate issues raised in AHAM's petition. *See* 84 FR 39215. For a subset of these tests, DOE specifically examined repeatability of test results. DOE performed multiple test

[5] A notation in the form of "AHAM, No. 25 at p. 4" identifies a written comment: (1) made by AHAM; (2) recorded in document number 25 that is filed in the docket for this rulemaking (Docket No. EERE-2018-BT-TP-0004) and available for review at *http://www.regulations.gov*; and (3) that appears on page 4 of document number 25.

replications on a set of individual heating elements (i.e., "surface units"), and its test results indicated that the coefficient of variation for each surface unit's energy consumption was no greater than 2 percent for all the units in the test sample. Table I summarizes these results.

Table I—Summary of Repeatability Tests for Electric Cooking Tops

Cooking Top Unit	Heating Element Type	Surface Unit Location	Number of Test Replications	Average Surface Unit Test Energy Consumption (Wh)	Coefficient of Variation
1	Smooth - Radiant	BL	10	191.7	2.0%
2	Smooth - Radiant	BR	4	196.3	1.3%
		FL	2	400.6	1.0%
3	Smooth – Radiant	FL	2	365.9	0.3%
4	Smooth - Induction	FL	2	340.9	1.3%
5	Smooth – Induction	BL	3	348.2	0.7%

As further discussed in the August 2019 NOPR, DOE also performed multiple tests on a single electric cooking top surface unit addressing the issue of element cycling in response to AHAM's petition. *See* 84 FR 39215. Table II summarizes these results.

Table II Summary of Cycling Tests on Electric Cooking Top Unit

Test Replication	Cycling Speed *	Heat-Up Energy (Wh)
1	slow	143.2
2	medium	147.0
3	fast	147.0
4	fast	146.2
5	slow	146.2
6	slow	144.8
7	slow	142.7
8	very fast	144.6
9	fast	145.0
10	medium	146.7
Coefficient of Variation		1.0%

***** The qualitative cycling speed is based on the duty cycle frequency, ranging from around 0.5 cycles/min for "slow", to more than 3 cycles/min for "very fast."

DOE recognized that both its tests and AHAM's were conducted by skilled technicians who understand both the product and test requirements. DOE tentatively concluded in the August 2019 NOPR that the differences in its testing results and the results achieved by AHAM

suggested that additional investigation of repeatability and reproducibility of the test procedure was warranted. DOE stated its belief that the differences in test results were indicative of the test not being representative of energy use or efficiency during an average use cycle, as required by 42 U.S.C. 6293(b)(3) of EPCA. 84 FR 39215.

In support of DOE's August 2019 NOPR to withdraw the cooking tops test procedure, AHAM re-submitted its prior comments on its petition as well as new comments that its test data demonstrate that DOE's cooking top test procedure does not produce accurate, reproducible, and representative results, and is overly burdensome to conduct. (AHAM, No. 35 at p. 2) With regard to representativeness, AHAM asserted that the test procedure is not representative of consumer use as required under 42 U.S.C. 6293(b)(3), particularly for gas cooking tops. (AHAM, No. 35 at p. 4, Exhibit B at pp. 2-3) AHAM stated that, among other things, small burners are not typically used for boiling water, but that is what DOE's cooking tops test procedure measures. *Id*. AHAM reiterated its previous argument that DOE extended a test meant for electric cooking tops to gas cooking tops without doing sufficient study to determine whether the electric test procedure it adopted would measure representative results for gas cooking tops. (AHAM, No. 35 at Exhibit A at p. 10, Exhibit B at p. 2) AHAM commented that separate international and industry standards exist for gas cooking tops, and both these methods use a "bring to boil" test, as opposed to a simmer test. (AHAM, No. 35 at Exhibit A at p. 12) AHAM asserted that the residual heat loss of a gas burner on simmer is significantly different than simmer on an electric unit where the electric unit retains heat from the cooking top. (AHAM, No. 35 at Exhibit A at p. 14) AHAM commented that a gas cooking top's ability to maintain simmer in the absence of retained heat is largely a function of grate to burner relationships, burner design, valve design, and pan position. (AHAM, No. 35 at Exhibit A at p. 12) According to AHAM, this relationship is not accounted

for in the electric cooking tops test because it does not need to be, but AHAM believes it does need to be addressed in a test applicable to gas cooking tops. (AHAM, No. 35 at Exhibit A at p. 12)

Additionally, AHAM presented data indicating that the conventional cooking tops test procedure may not be reproducible across labs for both gas and electric cooking tops. AHAM submitted data showing that repeated attempts by experienced technicians to follow the test procedure led to inaccurate results. (AHAM, No. 35 at p. 2, Exhibit A at pp. 22, 33) AHAM responded to stakeholder comments that AHAM's data is faulty because DOE's most recent testing on the repeatability of test results for electric cooking tops, summarized in Table I of this rule and in Table III.1 of the August 2019 NOPR, demonstrated the test procedure is not highly variable. AHAM clarified that, while their testing results are similar to DOE's with regard to repeatability, DOE has not evaluated reproducibility like AHAM has, and those lab-to-lab results form a significant basis upon which AHAM relies in its petition. (AHAM, No. 35 at p. 3) AHAM asserted that the results of its round–robin testing showed high levels of lab-to-lab variation, demonstrating that the test procedure is not reproducible. (AHAM, No. 35 at p. 3, Exhibit A at pp. 22, 33) AHAM argued that test procedures must be reproducible, at different laboratories and with different technicians, in order to be considered reasonably designed under 42 U.S.C. 6293(b)(3) of EPCA. *Id*. AHAM stated their appreciation that DOE is conducting additional testing to evaluate both repeatability and reproducibility and urged DOE to conduct this testing in different laboratories, not just with different technicians, in order to truly test reproducibility. (AHAM, No. 35 at p. 4)

AHAM additionally commented that the consensus standard working group in Europe has also indicated that, after gaining experience with its electric test—upon which DOE had

based its electric cooking top test and gas cooking top test—significant variation is being seen in the simmer portion of the test. AHAM believes this further highlights the need for DOE to withdraw its cooking top test procedure until a more accurate test procedure is available and has been vetted through round-robin testing in the United States. (AHAM, No. 35 at p. 4)

With regard to test burden, AHAM presented data that the existing test procedure is unduly burdensome to conduct as written, as it takes about 20 hours for an average four burner cooking top and the test procedure requires testing of every single burner individually. (AHAM, No. 35 at p. 3) AHAM commented that DOE's testing found even longer test times, with DOE stating in the August 2019 NOPR that in "total, a cooking top with four surface units requires around 36 work hours to complete." (AHAM, No. 35 at p. 4) Additionally, at the public meeting for the conventional cooking tops test procedure held on October 9, 2019, AHAM stated that manufacturers would have to make a significant investment to meet the stringent ambient conditions specified in the test procedure. (AHAM, Public Meeting Transcript, No. 38 at pp. 52-53)[6]

Whirlpool Corporation (Whirlpool), and GE Appliances (GEA) submitted comments in support of AHAM's positions. Whirlpool commented that the test procedure has so much variation that the reported energy performance values are not accurate or meaningful for consumers to use. (Whirlpool, No. 36 at p. 2) Whirlpool further asserted that the test procedure is very time-consuming and labor-intensive, as it must be monitored almost continuously with frequent manual adjustments made by the technician. (Whirlpool, No. 36 at p. 2) At the conventional cooking tops public meeting held on October 9, 2019, Whirlpool stated that testing

[6] A notation in the form of "AHAM, Public Meeting Transcript, No. 38 at pp. 52-53" identifies a written comment: (1) made by AHAM; (2) stated during the Public Meeting whose transcript is available as document number 38 that is filed in the docket for this rulemaking (Docket No. EERE-2018-BT-TP-0004) and available for review at *http://www.regulations.gov*; and (3) that appears on pages 52 through 53 of the transcript, document number 38.

to the requirements of the test procedure would be a substantial laboratory requirement, the cost of which has not been captured. Whirlpool estimated it would have to build approximately six new laboratories to enable it to conduct testing of its products. (Whirlpool, Public Meeting Transcript, No. 38 at pp. 34-35) GEA echoed AHAM's comments that its members were careful when conducting the previous testing in accordance with the DOE test procedure, and that it is the test procedure itself and unaccounted for differences in various cooking technologies that contribute to the higher-than-expected variation in test results. (GEA, No. 31 at p. 2) GEA reiterated its prior comments that the test procedure is unduly burdensome, in terms of the required testing time and resources necessary to complete such testing. (GEA, No. 31 at p. 2) Additionally, GEA commented that future changes to the U.S. safety standards for electric cooking tops may adversely impact results from the cooking tops test procedure. GEA stated that future improvements in the relevant safety standards, if any, could also negatively impact the repeatability, reproducibility, and representativeness of the cooktop test procedure. (GEA, No. 31 at p. 2)

In response to the August 2019 NOPR, DOE also received a joint submission from Pacific Gas and Electric Company (PG&E), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) (California Investor Owned Utilities (CA IOUs)) and a joint submission from the Appliance Standards Awareness Project (ASAP), California Energy Commission and Natural Resources Defense Council (Joint Advocates). These stakeholders were opposed to the withdrawal of the conventional cooking tops test procedure. The CA IOUs commented that DOE's proposed withdrawal is beyond its statutory authority, arguing that EPCA only authorizes DOE to prescribe or amend test procedures, not withdraw them without replacement. (CA IOUs, No. 34 at p. 1) The CA IOUs and the Joint Advocates similarly

commented that DOE's proposal to withdraw the cooking tops test procedure is not supported by DOE's own investigation and testing. (Joint Advocates, No. 37 at p. 1; CA IOUs, No. 34 at p. 2) Both stakeholders noted that, in light of AHAM's 2018 petition, DOE re-verified its water-based test procedure efficacy and found that the coefficient of variation for each surface unit's energy consumption did not exceed two percent of all units in the sample, which suggest the test procedure is repeatable for electric cooking tops. (CA IOUs, No. 34 at p. 2; Joint Advocates, No. 37 at p. 2) The Joint Advocates commented that even if there are outstanding questions around repeatability or reproducibility, these have no bearing on whether the test procedure is representative or unduly burdensome to conduct. The Joint Advocates, with similar comments from the CA IOUs, stated that DOE provides no evidence in the August 2019 NOPR that the test procedure is not representative of consumer use nor any evidence that the test itself is unduly burdensome. (Joint Advocates, No. 37 at p. 2; CA IOUs, No. 34 at p. 2) The Joint Advocates commented that withdrawing the test procedure prior to additional testing and publication of the results for stakeholder comment would be unwarranted and harmful to consumers. (Joint Advocates, No. 37 at p. 2) Further, the Joint Advocates stated that withdrawing the test procedure would be unwarranted because, in the absence of performance standards for cooking tops, manufacturers are not currently required to use the test procedure. *Id*. Additionally, the Joint Advocates stated they were unaware of any manufacturers that make efficiency representations for cooking tops. *Id*.

The CA IOUs similarly requested that DOE consider conducting additional round-robin testing in an effort to further understand the overall variation in results and to further explore the reasons for the discrepancies with results achieved via DOE testing and other industry testing, particularly for gas cooking tops in light of AHAM's limited sample size for these products. (CA

IOUs, No. 34 at p. 2) The CA IOUs commented that, at the NOPR public meeting, AHAM suggested that ambient conditions impact the repeatability of the test procedure. In response, the CA IOUs provided in their written comments that ambient conditions are specified in the test procedure, and thus in a controlled laboratory atmosphere, unexpected changes in a controlled conditioned space should not be the cause for significant changes in the performance results from one test run to another. Therefore, the CA IOUs suggested that the true causes for discrepancies in the test results remain mostly unknown. In the absence of additional energy performance data and analysis to further understand why this test procedure may not be repeatable or reproducible for both gas and electric cooking tops, the CA IOUs deemed the withdrawal of the test procedure to be premature. *Id.*

The CA IOUs further commented that they continue to support the water-based test procedure, believing it to be a straightforward representation of residential cooking top use, regardless of fuel type (gas or electric). They noted that the water heating method has been widely adopted in Europe and elsewhere, and they asserted that the 20-minute simmer portion of the test is representative of an "average household cooking duration." The CA IOUs are not aware of any vetted operational studies or reports suggesting gas cooking tops are not used for heating and/or maintaining a liquid (*i.e.*, water) at a specified temperature. *Id.*

Recognizing that any additional performance testing can be burdensome, the CA IOUs commented that once manufacturers and third-party test laboratories acquire all required testing materials to accurately and effectively run the test procedure, the burden is far less considerable. (CA IOUs, No. 34 at p. 3) Lastly, the Joint Advocates argued that DOE's statement in the August 2019 NOPR that "the cooking products test procedure, as conducted by testing laboratories that may not be familiar with its provisions, does not provide information that is

potentially beneficial to consumers," does not support DOE's proposal to withdraw the test procedure. The Joint Advocates commented that this statement is true for any test procedure, as any laboratory conducting testing using any test procedure must be sufficiently familiar with the procedure to accurately conduct the test. (Joint Advocates, No. 37 at p. 3)

As previously stated, test procedures promulgated by DOE must be reasonably designed to produce test results which measure the energy efficiency of a conventional cooking top during a representative average use cycle or period of use as determined by DOE. (42 U.S.C. 6293(b)(3)) The Federal test procedure must also not be unduly burdensome to conduct. *Id*. Stakeholders have raised valid concerns relating to the representativeness of the conventional cooking tops test procedure. The test data submitted by AHAM is inconsistent with DOE's own published testing data, to date. DOE's test data for electric cooktops shows small variations, though those tests were conducted within one lab. AHAM's lab-to-lab test results showed high levels of variation for gas and electric cooktops.[7] This inconsistency indicates that the test may not be reproducible across labs. DOE has not identified the cause of this variation, as DOE's published testing to date has involved only single lab testing of electric cooking tops and no actual tests of gas cooktops.

Reproducible test procedures are necessary to ensure that testing results are consistent from test-to-test and lab-to-lab, especially for compliance testing. Variability in test results indicates the test procedure is not representative of consumer use, as required by 42 U.S.C. 6293(b)(3) of EPCA. To ensure that the cooking tops test procedure measures energy use during a representative average use cycle or period of use, DOE concludes that further investigation is necessary. Before DOE can determine any appropriate test procedure for use in developing a

[7] See AHAM, No. 35 at Exhibit A at Table 1, p. 33.

subsequent energy conservation standard, DOE must conduct additional testing and gather additional data, including testing at additional laboratories, and publish such data for public comment.

Because DOE determines the cooking tops test procedure is not representative, the testing cost and testing time associated with the test procedure are unnecessarily burdensome and cannot be justified. There is currently no performance-based energy conservation standard for conventional cooking tops, and so a test procedure is required only if manufacturers are making representations of energy efficiency. DOE finds there is no benefit to either consumers or manufacturers to leave in place a test procedure for which there are substantial questions as to the test's accuracy and reliability for making efficiency representations. Moreover, from a market perspective, there is harm in requiring manufacturers to incur the cost of a test procedure for communicating energy efficiency to consumers that yields inaccurate results.

Under 42 U.S.C. 6293(b)(3) of EPCA, DOE has the authority to withdraw a test procedure that is not representative of an average use cycle or period of use and is unduly burdensome to conduct. Under this authority, DOE is able to withdraw test procedure rules that it discovers are faulty. DOE similarly invoked this authority when it repealed the conventional oven test procedure in the December 2016 TP Final Rule because it did not accurately represent consumer use. Notably, DOE received no objection to its authority to repeal the oven test procedure in that proceeding. 81 FR 91418, 91423-91424. Moreover, the APA provides any party with the right to petition for, among other things, the repeal of a rule. 5 USC 553(e). AHAM has sought repeal of the cooking tops test procedure by submitting a petition under this APA authority. DOE is following the process required by the APA, by undertaking this

rulemaking proceeding to repeal the cooking tops test procedure. See *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mutual Auto Ins. Co.*, 463 U.S. 29 (1983).

AHAM submitted test results conducted by skilled technicians that is inconsistent with DOE's own testing results to date regarding the test procedure for conventional cooking tops. Because of the inconsistency, which indicates the test procedure is not reproducible, DOE determines that the conventional cooking tops test procedure does not accurately represent consumer use and is unduly burdensome. DOE therefore withdraws the conventional cooking tops test procedure in this final rule. A design standard for conventional cooking tops still remains, which does not require a test procedure. DOE will continue collecting testing data for conventional cooking tops to determine any appropriate test procedure for use in developing any subsequent energy conservation standard.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866 and 13563

This final rule does not constitute a "significant regulatory action" under section 3(f) of Executive Order 12866, Regulatory Planning and Review, 58 FR 51735 (Oct. 4, 1993). Accordingly, this action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs (OIRA) in the OMB.

B. Review Under Executive Orders 13771 and 13777

On January 30, 2017, the President issued Executive Order (E.O.) 13771, "Reducing Regulation and Controlling Regulatory Costs." The E.O. 13771 stated the policy of the executive branch is to be prudent and financially responsible in the expenditure of funds, from both public and private sources. E.O. 13771 stated that it is essential to manage the costs associated with the governmental imposition of private expenditures required to comply with Federal regulations.

Additionally, on February 24, 2017, the President issued E.O. 13777, "Enforcing the Regulatory Reform Agenda." E.O. 13777 required the head of each agency designate an agency official as its Regulatory Reform Officer (RRO). Each RRO oversees the implementation of regulatory reform initiatives and policies to ensure that agencies effectively carry out regulatory reforms, consistent with applicable law. Further, E.O. 13777 requires the establishment of a regulatory task force at each agency. The regulatory task force is required to make recommendations to the agency head regarding the repeal, replacement, or modification of existing regulations, consistent with applicable law. At a minimum, each regulatory reform task force must attempt to identify regulations that:

(i) Eliminate jobs, or inhibit job creation;

(ii) Are outdated, unnecessary, or ineffective;

(iii) Impose costs that exceed benefits;

(iv) Create a serious inconsistency or otherwise interfere with regulatory reform initiatives and policies;

(v) Are inconsistent with the requirements of Information Quality Act, or the guidance issued pursuant to that Act, in particular those regulations that rely in whole or in part on data, information, or methods that are not publicly available or that are insufficiently transparent to meet the standard for reproducibility; or

(vi) Derive from or implement Executive Orders or other Presidential directives that have been subsequently rescinded or substantially modified.

DOE concludes that this rulemaking is consistent with the directives set forth in these executive orders.

C. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq*.) requires preparation of an initial regulatory flexibility analysis (IRFA) for any rule that by law must be proposed for public comment, and a final regulatory flexibility analysis (FRFA) for any such rule that an agency adopts as a final rule, 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 rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*http://energy.gov/gc/office-general-counsel*).

DOE reviewed the withdrawal of the cooking tops test procedure under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003.

DOE uses the Small Business Administration's (SBA) small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the North American Industry Classification System (NAICS). 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. The 2017 NAICS code for cooking tops is 335210, small electrical appliance manufacturing. The threshold number for NAICS code 335210 is 1,500 employees. This employee threshold includes all employees in a business's parent company and any other subsidiaries.

DOE conducted a focused inquiry into small business manufacturers of products covered by this rulemaking. DOE primarily used the Compliance Certification Database in DOE's

Compliance Certification Management System for cooking products to create a list of companies that sell cooking tops. DOE identified a total of 24 distinct companies that sell cooking tops in the United States.

DOE reviewed these companies to determine whether the entities met the SBA's definition of "small business" and screened out any companies that do not offer products covered by this rulemaking, do not meet the definition of a "small business," or are foreign-owned and operated. Based on this review, DOE identified 12 domestic manufacturers of cooking tops that are potential small businesses.

This final rule withdraws the conventional cooking tops test procedure for manufacturers. This does not increase manufacturer's testing burden or add any costs to any manufacturers, small or large. For these reasons, DOE concludes and certifies that this final rule does not have a "significant economic impact on a substantial number of small entities," and the preparation of an FRFA is not warranted.

D. Review Under the Paperwork Reduction Act

Manufacturers of cooking tops must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for cooking products, 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 30 hours per response,

including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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

E. Review Under the National Environmental Policy Act of 1969

In this final rule, DOE establishes test procedure amendments that will be used to develop and implement future energy conservation standards for cooking products. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq*.) and DOE's implementing regulations at 10 CFR part 1021. Specifically, this rule revokes the existing test procedures. The existing test procedures are not used for determining compliance with an energy conservation standard and as such, their revocation does not affect the amount, quality or distribution of energy usage, and, therefore, does not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

F. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 10, 1999), imposes certain requirements on federal agencies formulating and implementing policies or regulations that preempt state law or that have Federalism implications. The Executive Order requires agencies to

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

G. Review Under Executive Order 12988

With respect to the review of existing regulations and the promulgation of new regulations, section 3(a) of Executive Order 12988, "Civil Justice Reform," 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. 61 FR 4729 (Feb. 7, 1996). Regarding the review required by section 3(a), 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 section 3(a) and section 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.

H. 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. Pub. L. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action likely to result in a rule that may cause the expenditure by state, local, and tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a federal agency to develop an effective process to permit timely input by elected officers of state, local, and tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at

http://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.

I. 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 does 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.

J. Review Under Executive Order 12630

Pursuant to Executive Order 12630, "Governmental Actions and Interference with Constitutionally Protected Property Rights," 53 FR 8859 (March 15, 1988), DOE has determined that this final rule does not result in any takings that might require compensation under the Fifth Amendment to the U.S. Constitution.

K. Review Under the 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 federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). DOE has reviewed this final under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

L. Review Under Executive Order 13211

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

This regulatory action to withdraw the conventional cooking tops test procedure is not a significant regulatory action under Executive Order 12866. Moreover, it will 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.

M. Description of Materials Incorporated by Reference

In this final rule, DOE maintains the incorporation of reference of the following test standards: (1) IEC 62301, Household electrical appliances—Measurement of standby power," Publication 62301 (First Edition 2005-06), section 5; and (2) IEC 62301 Household electrical appliances—Measurement of standby power, (Edition 2.0 2011-01), sections 4 and 5. These standards include test conditions and testing procedures for measuring the average standby mode

and average off mode power consumption of microwaves and were previously incorporated by reference in appendix I.

Copies of IEC 62301 (First Edition) and IEC 62301 (Second Edition) can be obtained from the American National Standards Institute, 25 W. 43rd Street, 4th Floor, New York, NY 10036, (212) 642-4900, or go to *http://webstore.ansi.org*.

In this final rule, DOE also removes the test standard published by the European Committee for Electrotechnical Standardization, CENELEC, EN 60350-2:2013, "Household electric cooking appliances Part 2: Hobs—Methods for measuring performance," (June 3, 2013), IBR approved for appendix I to subpart B of 10 CFR part 430.

N. Congressional Notification

As required by 5 U.S.C. 801, DOE will submit to congress a report regarding the issuance of this final rule prior to the effective date set forth at the outset of this rulemaking. The report will state that it has been determined that the rule is not a "major rule" as defined by 5 U.S.C. 801(2).

V. Approval of the Office of the Secretary

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

List of Subjects in 10 CFR Part 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 July 17, 2020, by Daniel R Simmons, Assistant Secretary for Energy Efficiency, 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 July 21, 2020.

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Treena V. Garrett
Federal Register Liaison Officer,
U.S. Department of Energy

For the reasons set forth in the preamble, DOE amends part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations, as set forth below:

PART 430 - ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

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

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

§430.3 [Amended]

2. Section 430.3 is amended by:

a. Removing paragraph (l); and

b. Redesignating paragraphs (m) through (v) as paragraphs (l) through (u).

3. Section 430.23 is amended by revising paragraph (i) to read as follows:

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

* * * * *

(i) *Cooking products*. Determine the standby power for microwave ovens, excluding any microwave oven component of a combined cooking product, according to section 3.2.1 of appendix I to this subpart. Round standby power to the nearest 0.1 watt.

* * * * *

4. Appendix I to subpart B of part 430 is revised to read as follows:

Appendix I to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Cooking Products

1. Definitions

The following definitions apply to the test procedures in this appendix, including the test procedures incorporated by reference:

1.1 *Active mode* means a mode in which the product is connected to a mains power source, has been activated, and is performing the main function of producing heat by means of a gas flame, electric resistance heating, electric inductive heating, or microwave energy.

1.2 *Built-in* means the product is enclosed in surrounding cabinetry, walls, or other similar structures on at least three sides, and can be supported by surrounding cabinetry or the floor.

1.3 *Combined cooking product* means a household cooking appliance that combines a cooking product with other appliance functionality, which may or may not include another cooking product. Combined cooking products include the following products: Conventional range, microwave/conventional cooking top, microwave/conventional oven, and microwave/conventional range.

1.4 *Drop-in* means the product is supported by horizontal surface cabinetry.

1.5 *IEC 62301 (First Edition)* means the test standard published by the International Electrotechnical Commission, titled "Household electrical appliances—Measurement of standby power," Publication 62301 (First Edition 2005-06) (incorporated by reference; see §430.3).

1.6 *IEC 62301 (Second Edition)* means the test standard published by the International Electrotechnical Commission, titled "Household electrical appliances—Measurement of standby power," Publication 62301 (Edition 2.0 2011-01) (incorporated by reference; see §430.3).

1.7 *Normal non-operating temperature* means a temperature of all areas of an appliance to be tested that is within 5 °F (2.8 °C) of the temperature that the identical areas of the same basic model of the appliance would attain if it remained in the test room for 24 hours while not operating with all oven doors closed.

1.8 *Off mode* means any mode in which a cooking product is connected to a mains power source and is not providing any active mode or standby function, and where the mode may

persist for an indefinite time. An indicator that only shows the user that the product is in the off position is included within the classification of an off mode.

1.9 *Standby mode* means any mode in which a cooking product is connected to a mains power source and offers one or more of the following user-oriented or protective functions which may persist for an indefinite time:

(1) Facilitation of the activation of other modes (including activation or deactivation of active mode) by remote switch (including remote control), internal sensor, or timer;

(2) Provision of continuous functions, including information or status displays (including clocks) or sensor-based functions. A timer is a continuous clock function (which may or may not be associated with a display) that allows for regularly scheduled tasks and that operates on a continuous basis.

2. Test Conditions

2.1 *Installation*. Install a drop-in or built-in cooking product in a test enclosure in accordance with manufacturer's instructions. If the manufacturer's instructions specify that the cooking product may be used in multiple installation conditions, install the appliance according to the built-in configuration. Completely assemble the product with all handles, knobs, guards, and similar components mounted in place. Position any electric resistance heaters and baffles in accordance with the manufacturer's instructions.

2.1.1 *Microwave ovens, excluding any microwave oven component of a combined cooking product*. Install the microwave oven in accordance with the manufacturer's instructions and connect to an electrical supply circuit with voltage as specified in section 2.2.1 of this appendix. Install the microwave oven also in accordance with Section 5, Paragraph 5.2 of IEC 62301 (Second Edition) (incorporated by reference; see §430.3), disregarding the provisions regarding

batteries and the determination, classification, and testing of relevant modes. A watt meter shall be installed in the circuit and shall be as described in section 2.6.1.1 of this appendix.

2.2 *Energy supply*.

2.2.1 *Electrical supply*.

2.2.1.1 *Voltage*. For microwave oven testing, maintain the electrical supply to the unit at 240/120 volts ±1 percent. Maintain the electrical supply frequency for all products at 60 hertz ±1 percent.

2.3 *Air circulation*. Maintain air circulation in the room sufficient to secure a reasonably uniform temperature distribution, but do not cause a direct draft on the unit under test.

2.4 *Ambient room test conditions*

2.4.1 *Standby mode and off mode ambient temperature*. For standby mode and off mode testing, maintain room ambient air temperature conditions as specified in Section 4, Paragraph 4.2 of IEC 62301 (Second Edition) (incorporated by reference; see §430.3).

2.5 *Normal non-operating temperature*. All areas of the appliance to be tested must attain the normal non-operating temperature, as defined in section 1.7 of this appendix, before any testing begins. Measure the applicable normal non-operating temperature using the equipment specified in sections 2.6.2.1 of this appendix.

2.6 *Instrumentation*. Perform all test measurements using the following instruments, as appropriate:

2.6.1 *Electrical Measurements*.

2.6.1.1 *Standby mode and off mode watt meter*. The watt meter used to measure standby mode and off mode power must meet the requirements specified in Section 4, Paragraph 4.4 of IEC 62301 (Second Edition) (incorporated by reference; see §430.3). For microwave oven standby

mode and off mode testing, if the power measuring instrument used for testing is unable to measure and record the crest factor, power factor, or maximum current ratio during the test measurement period, measure the crest factor, power factor, and maximum current ratio immediately before and after the test measurement period to determine whether these characteristics meet the requirements specified in Section 4, Paragraph 4.4 of IEC 62301 (Second Edition).

2.6.2 *Temperature measurement equipment*.

2.6.2.1 *Room temperature indicating system*. For the test of microwave ovens, the room temperature indicating system must have an error no greater than ±1 °F (±0.6 °C) over the range 65° to 90 °F (18 °C to 32 °C).

3. Test Methods and Measurements

3.1. *Test methods*.

3.1.1 *Microwave oven*.

3.1.1.1 *Microwave oven test standby mode and off mode power except for any microwave oven component of a combined cooking product*. Establish the testing conditions set forth in section 2, Test Conditions, of this appendix. For microwave ovens that drop from a higher power state to a lower power state as discussed in Section 5, Paragraph 5.1, Note 1 of IEC 62301 (Second Edition) (incorporated by reference; see §430.3), allow sufficient time for the microwave oven to reach the lower power state before proceeding with the test measurement. Follow the test procedure as specified in Section 5, Paragraph 5.3.2 of IEC 62301 (Second Edition). For units in which power varies as a function of displayed time in standby mode, set the clock time to 3:23 and use the average power approach described in Section 5, Paragraph 5.3.2(a) of IEC 62301 (First Edition), but with a single test period of 10 minutes +0/−2 sec after an additional

stabilization period until the clock time reaches 3:33. If a microwave oven is capable of operation in either standby mode or off mode, as defined in sections 1.9 and 1.8 of this appendix, respectively, or both, test the microwave oven in each mode in which it can operate.

3.2 *Test measurements*.

3.2.1 *Microwave oven standby mode and off mode power except for any microwave oven component of a combined cooking product*. Make measurements as specified in Section 5, Paragraph 5.3 of IEC 62301 (Second Edition) (incorporated by reference; see §430.3). If the microwave oven is capable of operating in standby mode, as defined in section 1.9 of this appendix, measure the average standby mode power of the microwave oven, PSB, in watts as specified in section 3.1.1.1 of this appendix. If the microwave oven is capable of operating in off mode, as defined in section 1.8 of this appendix, measure the average off mode power of the microwave oven, POM, as specified in section 3.1.1.1.

3.3 *Recorded values*.

3.3.1 For microwave ovens except for any microwave oven component of a combined cooking product, record the average standby mode power, PSB, for the microwave oven standby mode, as determined in section 3.2.1 of this appendix for a microwave oven capable of operating in standby mode. Record the average off mode power, POM, for the microwave oven off mode power test, as determined in section 3.2.1 of this appendix for a microwave oven capable of operating in off mode.

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