DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[Docket No. EERE–2011–BT–TP–0054]

RIN 1904–AC63

Energy Conservation Program: Test Procedures for Residential Clothes Dryers

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

ACTION: Notice of proposed rulemaking.

SUMMARY: The U.S. Department of Energy (DOE) proposes to revise its test procedures for residential clothes dryers established under the Energy Policy and Conservation Act. The proposed amendments to appendix D1 would include testing methods for more accurately measuring the effects of automatic cycle termination. In addition, the proposed amendments would update the reference to the latest edition of the International Electrotechnical Commission (IEC) Standard 62301, ''Household electrical appliances—Measurement of standby power,'' Edition 2.0 2011–01. For the test procedures at both appendix D and appendix D1, DOE proposes to clarify the cycle settings used for the test cycle and the requirements for the gas supply for gas clothes dryers.

DATES: DOE will hold a public meeting on Wednesday, February 6, 2013 from 9 a.m. to 4 p.m., in Washington, DC. The meeting will also be broadcast as a webinar. See section V, ''Public Participation,'' for webinar registration information, participant instructions, and information about the capabilities available to webinar participants.

DOE will accept comments, data, and information regarding this notice of proposed rulemaking (NOPR) before and after the public meeting, but no later than March 18, 2013. See section V, ''Public Participation,'' for details.

ADDRESSES: The public meeting will be held at the U.S. Department of Energy, Forrestal Building, Room 1E–245 1000 Independence Avenue SW., Washington, DC 20585. To attend, please notify Ms. Brenda Edwards at (202) 586–2945. For more information, refer to the Public Participation, section V, near the end of this notice.

Any comments submitted must identify the NOPR on Test Procedures for Residential Clothes Dryers, and provide docket number EERE–2011–BT–TP–0054 and/or regulatory information number (RIN) 1904–AC63. Comments may be submitted using any of the following methods:

1. *Federal eRulemaking Portal: www.regulations.gov*. Follow the instructions for submitting comments.

2. *Email: RCDAT-2011-TP-0054@ee.doe.gov*. Include docket number EERE–2011–BT–TP–0054 and/or RIN 1904–AC63 in the subject line of the message.

3. *Mail:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, Mailstop EE–2J, 1000 Independence Avenue SW., Washington, DC 20585–0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.

4. *Hand Delivery/Courier:* Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Program, 6th Floor, 950 L'Enfant Plaza SW., Washington, DC 20024. *Telephone:* (202) 586–2945. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

For detailed instructions on submitting comments and additional information on the rulemaking process, see section V of this document (Public Participation).

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

A link to the docket web page can be found at: *http://www.regulations.gov/#!docketDetail;dct=FR%252BPR%252BN%252BO%252BSR;rpp=10;po=0;D=EERE-2011-BT-TP-0054*. This web page will contain a link to the docket for this notice on the *www.regulations.gov* site. The *www.regulations.gov* web page contains instructions on how to access all documents, including public comments, in the docket. See section V for information on how to submit comments through *www.regulations.gov*.

For further information on how to submit a comment or review other public comments and the docket, or participate in the public meeting, contact Ms. Brenda Edwards at (202) 586–2945 or email: *Brenda.Edwards@ee.doe.gov*.

FOR FURTHER INFORMATION CONTACT: Mr. Stephen Witkowski, U.S. Department of Energy, Energy Efficiency and Renewable Energy, Building Technologies Program, EE–2J, 1000 Independence Avenue SW., Washington, DC 20585–0121. Tel.: (202) 586–7463. Email: *Stephen.Witkowski@ee.doe.gov*.

Ms. Elizabeth Kohl, U.S. Department of Energy, Office of the General Counsel, 1000 Independence Avenue SW., Washington, DC, 20585–0121. Tel.: (202) 586–7796, Email: *Elizabeth.Kohl@hq.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Authority and Background

Title III of the Energy Policy and Conservation Act (42 U.S.C. 6291, *et seq.;* ''EPCA'' or ''the Act'') sets forth a variety of provisions designed to improve energy efficiency. (All references to EPCA refer to the statute as amended through the Energy Independence and Security Act of 2007 (EISA 2007), Public Law 110–140 (Dec. 19, 2007)). Part B of title III, which for editorial reasons was re-designated as Part A upon codification in the U.S. Code (42 U.S.C. 6291–6309), establishes the ''Energy Conservation Program for Consumer Products Other Than Automobiles.'' Covered consumer products include clothes dryers, the subject of today's notice. (42 U.S.C. 6292(a)(8))

Under EPCA, this program consists essentially of four parts: (1) Testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. The testing requirements consist of test procedures that manufacturers of covered products must use (1) as the basis for certifying to DOE that their products comply with the applicable energy conservation standards adopted under EPCA, and (2) for making representations about the efficiency of those products. Similarly, DOE must use these test requirements to determine whether the products comply with any relevant standards promulgated under EPCA.

A. General Test Procedure Rulemaking Process

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 provides in relevant part that any test procedures prescribed or amended under this section must 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 and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

In addition, if DOE determines that a test procedure amendment is warranted, it must publish proposed test procedures and offer the public an opportunity to present oral and written comments on them. (42 U.S.C. 6293(b)(2)) In any rulemaking to amend a test procedure, DOE must also determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e))

EPCA also requires DOE to amend the test procedures for all residential covered products to include measures of standby mode and off mode energy consumption. Specifically, EPCA provides definitions of ''standby mode'' and ''off mode'' (42 U.S.C. 6295(gg)(1)(A)) and permits DOE to amend these definitions in the context of a given product (42 U.S.C. 6295(gg)(1)(B)). The statute requires integration of such energy consumption into the overall energy efficiency, energy consumption, or other energy descriptor for each covered product, unless DOE determines that—

(i) The current test procedures for a covered product already fully account for and incorporate the standby mode and off mode energy consumption of the covered product; or

(ii) Such an integrated test procedure is technically infeasible for a particular covered product, in which case the Secretary shall 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))

In any test procedure amendment, DOE must consider the most current versions of IEC Standard 62301, ''Household electrical appliances—Measurement of standby power,'' and IEC Standard 62087, ''Methods of measurement for the power consumption of audio, video, and related equipment.'' *Id.*

B. DOE Clothes Dryer Test Procedure

DOE's test procedures for clothes dryers are codified in appendix D and appendix D1 to subpart B of Title 10 of the Code of Federal Regulations (CFR). DOE established its test procedure for clothes dryers at appendix D in a final rule published in the **Federal Register** on September 14, 1977 (the September 1977 TP Final Rule). 42 FR 46145. On May 19, 1981, DOE published a final rule (the May 1981 TP Final Rule) to amend the test procedure by establishing a field-use factor for clothes dryers with automatic termination controls, clarifying the test cloth specifications and clothes dryer preconditioning, and making editorial and minor technical changes. 46 FR 27324. The test procedure includes provisions for determining the energy factor (EF) for clothes dryers, which is a measure of the total energy required to dry a standard test load of laundry to a ''bone dry'' [1] state.

1. January 2011 TP Final Rule

On January 6, 2011, the U.S. Department of Energy (DOE) published in the **Federal Register** a final rule for the residential clothes dryer and room air conditioner test procedure rulemaking (76 FR 972) (January 2011 TP Final Rule), in which it (1) adopted the provisions for the measurement of standby mode and off mode power use for those products; and (2) adopted several amendments to the clothes dryer and room air conditioner test procedures concerning the active mode for these products. 76 FR 972 (Jan. 6, 2011). DOE created a new appendix D1 in 10 CFR part 430 subpart B that contained the amended test procedure for clothes dryers. Manufacturers must use the test procedures in appendix D1 to demonstrate compliance with the amended energy conservation standards for clothes dryers as of January 1, 2015 (76 FR 52852 (Aug. 24, 2011), 76 FR 52854 (Aug. 24, 2011))

For clothes dryer standby mode and off mode, the January 2011 TP Final Rule amended the DOE clothes dryer test procedure to incorporate by reference specific clauses from the International Electrotechnical Commission (IEC) Standard 62301, ''Household electrical appliances–Measurement of standby power,'' (first edition June 2005) regarding test conditions and test procedures for measuring standby mode and off mode power consumption, as well as language to clarify application of these provisions for measuring standby mode and off mode power consumption in clothes dryers. In addition, DOE adopted definitions of modes based on the relevant provisions from IEC Standard 62301 Second Edition Committee Draft

[1] ''Bone dry'' is defined in the DOE clothes dryer test procedure as a condition of a load of test clothes which has been dried in a dryer at maximum temperature for a minimum of 10 minutes, removed and weighed before cool down, and then dried again for 10-minute periods until the final weight change of the load is 1 percent or less. (10 CFR subpart B, appendix D, section 1.2)

for Vote (IEC Standard 62301 CDV). DOE established the Combined Energy Factor (CEF) for clothes dryers to integrate energy use in the standby mode and off mode with the energy use of the main functions of the product.[2] 76 FR 972, 975–6 (Jan. 6, 2011).

For clothes dryer active mode, DOE adopted amendments in the January 2011 TP Final Rule to include provisions for the testing of ventless clothes dryers. 76 FR 972, 976–7 (Jan. 6, 2011). The amendments also included the following changes to reflect the current usage and capabilities of products: (1) Changing the annual clothes dryer use cycles from 416 to 283 cycles per year, (2) changing the initial remaining moisture content (RMC) [3] of clothes dryer loads from 70 percent ± 3.5 percent to 57.5 percent ± 3.5 percent, and (3) changing the clothes dryer test load size from 7.00 pounds (lbs) ± .07 lbs to 8.45 ± .085 lbs for standard-size clothes dryers. 76 FR 972, 977 (Jan. 6, 2011). The January 2011 TP Final Rule also amended the DOE clothes dryer test procedure by updating test cloth preconditioning provisions; revising the water temperature for test load preparation from 100 degrees Fahrenheit (°F) ± 5 °F to 60 °F ± 5 °F; updating the reference to the relevant industry test standard (Association of Home Appliance Manufacturers (AHAM) Standard HLD–1–2009); eliminating reference to an obsolete industry test standard (AHAM Standard HLD–2EC); clarifying the required gas supply conditions for testing gas clothes dryers; clarifying the provisions for measuring the drum capacity; clarifying the definition of ''automatic termination control'' for clothes dryers; and adding the calculations of EF and CEF to 10 CFR part 430, subpart B, appendix D1. 76 FR 972, 978 (Jan. 6, 2011).

In the January 2011 TP Final Rule, DOE did not adopt the amendments to more accurately measure automatic cycle termination that were originally proposed in the test procedure supplemental notice of proposed rulemaking (SNOPR) (June 2010 TP SNOPR) (75 FR 37594, 37612–20 (June 29, 2010)).[4] As further discussed in the January 2011 TP Final Rule, DOE conducted testing of representative residential clothes dryers using the automatic cycle termination test procedure proposed in the June 2010 TP SNOPR. The results of the testing revealed that all of the clothes dryers tested significantly over-dried the DOE test load [5] to near bone dry and, as a result, the measured EF values were significantly lower than EF values obtained using the existing DOE test procedure. The test data also indicated that clothes dryers equipped with automatic termination controls would be considered less efficient than timer dryers. 76 FR 972, 977 (Jan. 6, 2011).

In the January 2011 TP Final Rule, DOE concluded that the test procedure amendments for automatic cycle termination proposed in the June 2010 TP SNOPR do not adequately measure the energy consumption of clothes dryers equipped with such systems using the test load specified in the DOE test procedure. DOE stated that clothes dryers with automatic termination sensing control systems, which infer the RMC of the load from the properties of the exhaust air such as temperature and humidity, may be designed to stop the cycle when a load of varying weights, composition, and size has a higher RMC than the RMC obtained using the proposed automatic cycle termination test procedure in conjunction with the existing DOE test load. In considering whether other test loads would be appropriate to incorporate into the DOE test procedure to produce both representative and repeatable test results, however, DOE noted that manufacturers indicated that test load types and test cloth materials different than those specified in the DOE test procedure do not produce results as repeatable as those obtained using the test load as currently specified. 76 FR 977 (Jan. 6, 2011).

2. August 2011 RFI

On August 12, 2011, DOE published a Request for Information (RFI) to further investigate the effects of automatic cycle termination on the energy efficiency (August 2011 RFI). 76 FR 50145. DOE sought information, data, and comments regarding methods for more accurately measuring the effects of automatic cycle termination in the clothes dryer test procedure. In particular, DOE sought comment on the following: (1) The characteristics of loads of varying weights, composition, and size, (2) the accuracy of different automatic cycle termination sensors and controls, (3) the target final RMC used by manufacturers to maintain consumer satisfaction, (4) the effects of the characteristics of water (*i.e.,* hardness and conductivity) used for wetting the test load prior to testing, and (5) the cycle settings selected by consumers for automatic termination cycles. In response to the August 2011 RFI, interested parties commented that DOE should amend the clothes dryer test procedure to include provisions to account for the effectiveness of automatic cycle termination and amend the relevant energy conservation standards based on the effects of the test procedure changes according to EPCA.

II. Summary of the Notice of Proposed Rulemaking

Automatic Termination Control Procedures

In this notice of proposed rulemaking (NOPR), DOE proposes to modify the test procedures for clothes dryers in 10 CFR part 430, subpart B, appendix D1 to include methods for more accurately measuring the effects of automatic cycle termination. The proposed method would require that clothes dryers with automatic cycle termination controls be tested using the ''Normal'' automatic termination cycle setting. Where the drying temperature setting can be chosen independently, it shall be set to the maximum. Where the dryness level setting can be chosen independently, it shall be set to the ''normal'' or ''medium'' dryness level setting.[6] The proposed amendments would then specify that the clothes dryer be allowed to run until the completion of the drying cycle, including the cool down period, to achieve a final RMC of no more than 2 percent. If the final measured RMC is above 2 percent, the test would be considered invalid and the proposed amendments would require that a new test cycle be run using the highest dryness level setting. DOE notes that a final RMC of 2 percent using the DOE test load would be more representative of clothes dryers currently on the market and representative of the maximum consumer-accepted final

[2] The CEF is defined as the clothes dryer test load weight in pounds divided by the sum of the per-cycle standby and off mode energy consumption and either the total per-cycle electric dryer energy consumption or the total per-cycle gas dryer energy consumption expressed in kilowatt hours (kWh).

[3] RMC is the ratio of the weight of water contained by the test load to the bone-dry weight of the test load, expressed as a percent.

[4] The test method proposed in the June 2010 TP SNOPR involved testing clothes dryers with automatic termination controls using the ''normal'' setting (and where the temperature setting can be chosen independently of the program, it shall be set to the highest level) and a test load with a starting moisture content of 57.5 ± 0.33 percent, allowing the dryer to run until the heater switches off for the final time at the end of the drying cycle to achieve a final remaining moisture content of no more than 5 percent.

[5] The DOE test load is composed of cotton momie test cloths that are each 24 inches by 36 inches in dimensions and are a blend of 50-percent cotton and 50-percent polyester.

[6] Most clothes dryers available on the market provide separate settings for the ''temperature level'' and ''dryness level.'' The temperature level refers to the temperature of the hot air used to dry the load in the drum. The dryness level refers to the desired remaining moisture content of the load at the completion of the drying cycle.

RMC. Finally, DOE is proposing to apply a field use factor of 0.80 for clothes dryers with automatic cycle termination to account for the measured energy consumption at the end of the automatic termination cycle drying the DOE test load below 2-percent RMC.

For clothes dryers with only timed dry control settings, the proposed amendments would require that the existing timed dry test cycle in appendix D1 be used, but change the final RMC from 2.5–5 percent to 1–2.5 percent. DOE also proposes to change the normalization in the calculation of the per-cycle energy consumption to represent the energy consumption required to dry the test load to 2-percent RMC. Both of these changes are proposed to be consistent with the test method for automatic cycle termination and to be representative of the final RMC of clothes dryers currently on the market using the DOE test load.

Incorporation of IEC Standard 62301 (Second Edition)

The IEC published IEC Standard 62301, ''Household electrical appliances—Measurement of standby power,'' Edition 2.0 2011–01 (IEC Standard 62301 (Second Edition) or ''Second Edition'') on January 27, 2011. Consistent with EPCA requirements for amending test procedures to include standby and off mode procedures (42 U.S.C. 6295(gg)(2)(A)), DOE analyzed IEC Standard 62301 (Second Edition) for today's NOPR. DOE has reviewed this latest draft of the IEC standard and believes that it provides for improvement for some measurements of standby mode and off mode energy use. Accordingly, DOE proposes in today's NOPR to incorporate certain provisions of the IEC Standard 62301 (Second Edition), along with clarifying language, into the DOE clothes dryer test procedure.

Clarifications to Test Conditions

DOE received a number of inquiries from independent test laboratories requesting clarification on testing according to the DOE clothes dryer test procedure. Based on these inquiries, DOE is proposing in today's NOPR to amend both 10 CFR part 430, subpart B, appendix D and appendix D1 to clarify the cycle settings used for the test cycle and the requirements for the gas supply for gas clothes dryers.

III. Discussion

A. Products Covered by This Test Procedure Rulemaking

Today's proposed amendments to DOE's clothes dryer test procedure cover both electric and gas clothes dryers. DOE defines a clothes dryer to mean a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation, with blower(s) driven by an electric motor(s) and either gas or electricity as the heat source. 10 CFR 430.2. DOE is not proposing in today's NOPR to change the definition for clothes dryers in DOE's regulations.

B. Automatic Cycle Termination

In today's NOPR, DOE is proposing amendments to the clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1 to more accurately measure the effects of automatic cycle termination. The current DOE test procedures for clothes dryers in 10 CFR part 430, subpart B, appendices D and D1 currently require manufacturers to apply a field use factor to the per-cycle drying energy consumption to determine the performance of clothes dryers equipped with both automatic cycle termination and timers. For dryers with automatic termination control, the test procedures do not distinguish between the type of sensing control system (*e.g.,* temperature-sensing or moisture-sensing controls) and the sophistication and accuracy of the control system. Gas or electric clothes dryers with time termination control (*i.e.,* those dryers equipped with a timer to determine the end of a drying cycle) are assigned a field use factor of 1.18, while dryers with automatic termination are assigned a field use factor of 1.04. The field use factors are assigned to account for drying beyond the 2.5–5 percent RMC specified in the test procedure. The field use factor for timer dryers was derived from a field study conducted by the Oklahoma Gas and Electric Company in 1971, consisting of 64 households and 33,000 loads of clothing, as well as data reported by AHAM representing the energy consumption in 1972 of 2,983,200 production units of clothes dryers. 42 FR 46145, 46146 (Sept. 14, 1977). For automatic termination control dryers, the field use factor was derived from a field study conducted by AHAM in 1977 involving 72 households. 45 FR 46762–3 (July 10, 1980); 46 FR 27324 (May 19, 1981).

In the January 2011 TP Final Rule, DOE did not adopt the amendments to more accurately measure automatic cycle termination that were originally proposed in June 2010 TP SNOPR. 76 FR 972, 977–78 (Jan. 6, 2011). In that June 2010 TP SNOPR, DOE proposed to revise its clothes dryer test procedure to include definitions of and provisions for testing both timer dryers and automatic termination control dryers based on the methodology provided in Australia/New Zealand (AS/NZS) Standard 2442.1: 1996, ''Performance of household electrical appliances—Rotary clothes dryers, Part 1: Energy consumption and performance'' (AS/NZS Standard 2442.1) and AS/NZS Standard 2442.2: 2000, ''Performance of household electrical appliances—Rotary clothes dryers, Part 2: Energy labeling requirements'' (AS/NZS Standard 2442.2). 75 FR 37594, 37598 (June 29, 2010). DOE proposed to incorporate the testing methods from these international test standards, along with a number of clarifications, to measure the energy consumption for both timer dryers and automatic termination control dryers. The measurement would account for the energy consumed by the clothes dryer after the load reaches an RMC of 5 percent. 75 FR 37594, 37599 (June 29, 2010). The proposed test method in the June 2010 TP SNOPR specified that a clothes dryer with automatic cycle termination controls be tested using the ''normal'' cycle setting, and where the temperature setting can be chosen independently of the program, it would be set to the highest level. The clothes dryer would then be allowed to run until the heater switched off for the final time at the end of the drying cycle. If the final RMC was higher than 5 percent, the test would be re-run using the highest dryness level setting. *Id.*

In addition to the provisions for automatic cycle termination clothes dryers, DOE also proposed testing methods in the June 2010 TP SNOPR for timer dryers based on AS/NZS Standard 2442.1. The proposed test method specified that the clothes dryer be operated at the maximum temperature setting until the final RMC of the load was between 5 and 6 percent. The procedure would then be repeated to dry the load until the final RMC was between 4 and 5 percent, with the results from these two tests used to interpolate the value of the per-cycle energy consumption required to dry the test load to exactly 5-percent RMC. 75 FR 37594, 37617 (June 29, 2010).

As discussed in the January 2011 TP Final Rule, DOE conducted testing of representative residential clothes dryers using the automatic cycle termination test procedure proposed in the June 2010 TP SNOPR. The results of the testing revealed that all of the clothes dryers tested significantly over-dried the DOE test load to near bone dry and, as a result, the measured EF values were significantly lower than EF values obtained using the existing DOE test procedure in appendix D. 76 FR 972, 977 (Jan. 6, 2011). In the January 2011

TP Final Rule, DOE concluded that the test procedure amendments for automatic cycle termination proposed in the June 2010 TP SNOPR do not adequately measure the energy consumption of clothes dryers equipped with such systems using the test load specified in the DOE test procedure. DOE stated that clothes dryers with automatic termination sensing control systems, which infer the RMC of the load from the properties of the exhaust air such as temperature and humidity, may be designed to stop the cycle when a load of varying weights, composition, and size has a higher RMC than the RMC obtained using the proposed automatic cycle termination test procedure in conjunction with the existing DOE test load. In considering whether other test loads would be appropriate to incorporate into the DOE test procedure to produce both representative and repeatable test results, however, DOE noted that manufacturers indicated that test load types and test cloth materials different than those specified in the DOE test procedure do not produce results as repeatable as those obtained using the test load as currently specified. 76 FR 972, 977 (Jan. 6, 2011).

1. August 2011 RFI

As discussed in section I of this notice, DOE published the August 2011 RFI to further investigate the effects of automatic cycle termination on the energy efficiency. 76 FR 50145 (Aug. 12, 2011). DOE sought information, data, and comments regarding methods for more accurately measuring the effects of automatic cycle termination in the residential clothes dryer test procedure. In particular, DOE sought comment on the following: (1) The characteristics of loads of varying weights, composition, and size, (2) the accuracy of different automatic cycle termination sensors and controls, (3) the target final RMC used by manufacturers to maintain consumer satisfaction, (4) the effects of the characteristics of water (*i.e.,* hardness and conductivity) used for wetting the test load prior to testing, and (5) the cycle settings selected by consumers for automatic termination cycles.

In response to the August 2011 RFI, DOE received the ''Joint Petition to Amend the Test Procedure for Residential Clothes Dryers to Include Provisions Related to Automatic Termination Controls'' (the ''Joint Petition''), a comment submitted by groups representing manufacturers (AHAM, Whirlpool Corporation (Whirlpool), General Electric Company (GE), Electrolux, LG Electronics, Inc. (LG), BSH Home Appliances (BSH), Alliance Laundry Systems (ALS), Viking Range, Sub-Zero Wolf, Friedrich A/C, U-Line, Samsung, Sharp Electronics, Miele, Heat Controller, AGA Marvel, Brown Stove, Haier, Fagor America, Airwell Group, Arcelik, Fisher & Paykel, Scotsman Ice, Indesit, Kuppersbusch, Kelon, and DeLonghi); energy and environmental advocates (American Council for an Energy Efficient Economy (ACEEE), Appliance Standards Awareness Project (ASAP), Natural Resources Defense Council (NRDC), Alliance to Save Energy (ASE), Alliance for Water Efficiency (AWE), Northwest Power and Conservation Council (NPCC), and Northeast Energy Efficiency Partnerships (NEEP)); and consumer groups (Consumer Federation of America (CFA) and the National Consumer Law Center (NCLC)) (collectively, the ''Joint Petitioners''). The Joint Petitioners commented that DOE should amend the clothes dryer test procedure to include provisions to account for the effectiveness of automatic cycle termination. (Joint Petition, No. 2 at pp. 1, 4–5) [7]

DOE notes that AHAM withdrew its support for the petition in a letter dated May 29, 2012, stating that the petition was predicated on DOE adoption of test procedure provisions to account for automatic termination controls by December 31, 2011. DOE acknowledges AHAM's withdrawal but considers the substantive provisions to account for such controls in the discussion that follows. (AHAM, No. 5 at pp. 1–2)

The Joint Petitioners recognized DOE's concerns that the amendments for automatic cycle termination proposed in the June 2010 TP SNOPR may not properly measure the effectiveness of automatic termination controls, particularly in light of data that suggested that automatic termination control dryers may in fact be drying clothes to approximately 5-percent RMC rather than the less than 2-percent RMC resulting from testing using the DOE test cloth. The Joint Petitioners noted that the DOE test cloth is uniform, for purposes of repeatability and reproducibility, but likely dries faster and more uniformly than a load of varying weights, composition, and size. (Joint Petition, No. 2 at p. 5)

As part of the Joint Petition, AHAM members provided test data on clothes dryers with automatic termination controls representing 60 percent of shipments, measuring the final RMC at the completion of a ''normal'' automatic cycle, including cool down, using the DOE test load. The data, presented below in Figure III.1, show that all tested models had a final RMC below 2 percent. The Joint Petitioners stated that the testing assumed that the current market ending RMC is appropriate. The Joint Petitioners commented that the test results demonstrated that an ending RMC of 2 percent using the DOE test cloth best approximates the maximum consumer-accepted final RMC. (Joint Petition, No. 2 at pp. 5–6)

[7] A notation in the form ''Joint Petition, No. 2 at pp. 1, 4–5'' identifies a written comment: (1) Made by the Joint Petition; (2) recorded in document number 2 that is filed in the docket of the residential dishwasher, dehumidifier, and conventional cooking products test procedures rulemaking (Docket No. EERE–2011–BT–TP–0054) and available for review at *www.regulations.gov;* and (3) that appears on pages 1 and 4–5 of document number 2.

[8] Joint Petition, No. 2 at p. 6

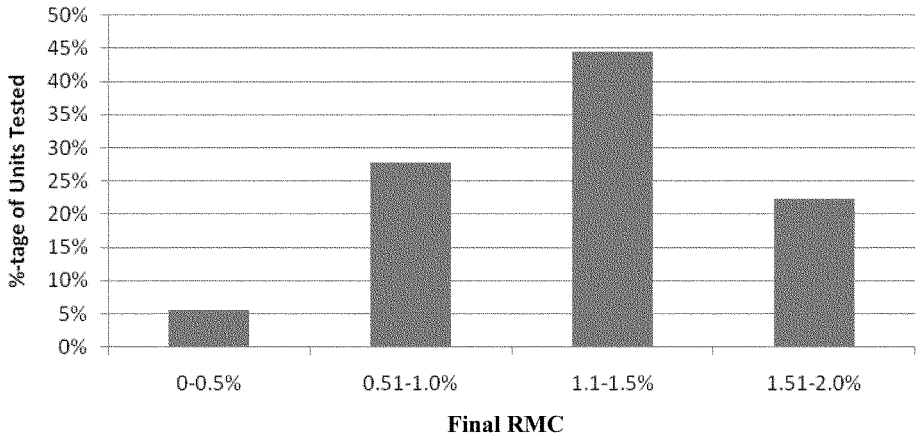

Figure III.1 AHAM Test Data – Final RMC[8]

Based on this data, the Joint Petitioners stated that DOE should amend the clothes dryer test procedure to include the full automatic termination cycle, including cool down. The Joint Petitioners stated that testing the entire cycle is more representative of actual consumer use and is less of a test burden for manufacturers than DOE's proposal in the June 2010 TP SNOPR to stop the dryer when the heater switches off for the final time at the end of the drying cycle. In addition, the Joint Petitioners commented that the test procedure should be amended to state that the final RMC when testing units with automatic termination controls shall be no more than 2 percent when testing with the DOE test load to be representative of clothes dryers currently on the market. Any test in which the final RMC is 2 percent or less should be considered valid. If the final RMC is greater than 2 percent, the test would be invalid and a new test run would be conducted using the highest dryness level setting. (Joint Petition, No. 2 at p. 6)

ALS commented that it supports the continued use of the DOE test cloth and that attempting to use the IEC/AHAM test load that is composed of more all-cotton material of varying shapes and sizes will add more variability and uncertainty to the test results. ALS stated that the DOE test procedure needs to be repeatable, and that changing to a different test cloth is not appropriate. (ALS, No. 3 at p. 1)

2. Product Testing

To evaluate potential amendments for automatic cycle termination, DOE selected a representative sample of 20 clothes dryers encompassing all clothes dryer product classes. DOE considered features such as rated energy factor, rated capacity, control type (*i.e.,* electromechanical versus electronic), and automatic cycle termination sensor technology (if advertised) when selecting units to be most representative of products currently available on the U.S. market. The test units and key features are presented below in Table III.1. Unless otherwise noted, the test unit numbers presented in Table III.1 are used in other tables of results in today's notice.

TABLE III.1—CLOTHES DRYER TEST UNITS AND FEATURES

Product class	Test unit	Rated EF [1] (lbs/kWh)	Drum airflow direction	Controls	Sensor type
Vented Electric Standard	1	3.1	Back to Front	Electronic	Moisture
	2	3.19	Back to Front	ElectroMechanical	Temp
	3	3.03	Back to Front	Electronic	Moisture
	4	3.04	Back to Back	Electronic	Moisture
	5	3.4	Back to Front	Electronic	Moisture
	6	3.1	Back to Back	ElectroMechanical	Moisture
	7	3.1	Back to Back	ElectroMechanical	Moisture
	8	3.08	Back to Front	Electronic	Moisture
Vented Electric Compact (240 Volt (V)).	9	2.95	Back to Front	Electronic	Moisture
	10	2.98	Back to Back	ElectroMechanical	Temp
Vented Electric Compact (120V)	11	3.15	Back to Back	ElectroMechanical	Moisture
Vented Gas	12	2.77	Back to Front	ElectroMechanical	Temp
	13	2.68	Back to Front	Electronic	Moisture
	14	2.71	Back to Front	Electronic	Moisture
	15	2.85	Back to Back	Electromechanical	Moisture
	16	2.76	Back to Front	Electronic	Moisture
	17	2.8	Back to Front	Electronic	Moisture
Ventless Electric Compact (240V).	18	Not Listed	Back to Front	Electronic	Moisture
Ventless Electric Combination Washer/Dryer.	19	Not Listed	Front to Back	Electronic	None—Timed Dry Only

TABLE III.1—CLOTHES DRYER TEST UNITS AND FEATURES—Continued

Product class	Test unit	Rated EF [1] (lbs/kWh)	Drum airflow direction	Controls	Sensor type
	20	Not Listed	Front to Back	Electronic	Temp

[1] The Rated EF is based on the DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D.

DOE initially conducted testing for all test units according to the DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1. Appendix D1 requires that the DOE test load, initially soaked with an RMC of 57.5 ± 3.5 percent, be dried using the timed dry and maximum temperature settings until the test load has reached a final RMC of 2.5 to 5 percent without allowing the dryer to advance into a cool-down phase. A field use factor is then applied to the measured per-cycle energy consumption to account for the over-drying energy consumption associated with the use of either timer clothes dryers or automatic cycle termination clothes dryers. DOE then conducted testing of these units using automatic cycle termination test methodologies with different test loads to evaluate the effects of these potential test procedure amendments on the measured efficiency as compared to the existing DOE test procedure in 10 CFR part 430, subpart B, appendix D1. DOE also conducted additional testing to evaluate repeatability and reproducibility of the test results.

In conducting the testing, DOE used the DOE test load and the test load specified in both the AHAM clothes dryer test standard HLD–1–2009, ''Household Tumble Type Clothes Dryers,'' and the IEC test standard 61121, ''Tumble dryers for household use—Methods for measuring the performance,'' Edition 3 (2005), which consists of cotton bed sheets, towels, and pillowcases. DOE concluded in the August 2011 RFI that clothes dryers with automatic termination sensing control systems may be designed to stop the cycle when a load of varying weights, composition, and size has a higher RMC than the RMC obtained using the automatic termination drying cycle in conjunction with the existing DOE test load. 76 FR 50145, 50146 (Aug. 12, 2011). In addition, the Northwest Energy Efficiency Alliance (NEEA) supplied DOE with data from a residential laundry field use study that NEEA conducted. The field study, which included 50 households in the northwest United States metered from January 2012 to March 2012, gathered data on the energy use and usage habits for residential clothes dryers, including information on the type of fabrics composing household laundry loads for each laundry cycle. The data, presented below in Table III.2, show the frequency of various load compositions, ranging from ''light'' to ''heavy,'' for the average household surveyed.

TABLE III.2—LAUNDRY LOAD FABRIC COMPOSITION FOR THE AVERAGE HOUSEHOLD SURVEYED IN THE NEEA FIELD USE STUDY

Laundry load description	Percentage of laundry cycles for average household surveyed (%)
Light	6.8
Mixed Light/Medium	19.9
Medium	23.5
Mixed Light/Medium/Heavy	13.1
Mixed Medium/Heavy	23.3
Heavy	13.5

Light = permanent press, light socks, light/casual shirts, pillow cases, underwear, light weight/smaller sheets.

Medium = heavy shirts, medium weight/larger sheets, casual pants, light weight sweatpants and shirts, heavy socks, pullovers.

Heavy = towels, heavy work clothing, flannel sheets, heavy sweatpants and shirts, jeans.

DOE conducted the testing for the proposed automatic cycle termination test methodology according to the DOE test procedure, with the following modifications. The test load was prepared with a starting RMC of 57.5 percent ± 0.33 percent. The controls were set as follows:

- Instead of using the timed dry cycle setting, the ''normal'' automatic termination cycle setting was selected. If a ''normal'' cycle setting was not provided, then the test cycle recommended by manufacturers for drying cotton or linen clothes was used.
- Where the temperature setting could be chosen independently of the program, the highest level was selected.
- Where the dryness level setting could be chosen independently of the program, it was set to the ''normal'' or ''medium'' level. If such designation was not provided, then the dryness level was set at the mid-point between the minimum and maximum settings.

The clothes dryer was then allowed to run until the completion of the cycle, including the cool-down period. At the completion of the cycle, the clothes were weighed to determine the final RMC. If the final RMC was below 2 percent for the DOE test load, the test was considered valid. If the RMC was higher than 2 percent (*i.e.,* the test load contained more moisture than would be acceptable to consumers), the test was considered invalid and was re-run using the highest dryness level setting. DOE selected the 2-percent RMC threshold based on data presented in the Joint Petitioners' comment regarding RMC levels acceptable to consumers, discussed above. For the IEC/AHAM test load, similar test conditions were applied except that the threshold value for the final RMC was changed from 2 percent to 5 percent because of the more varied composition of the IEC/AHAM test load.

Table III.3 presents the key features of the automatic cycle termination testing methodology as compared to the DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1.

TABLE III.3—TESTS METHODS FOR DOE TESTING

Test condition	DOE test procedure (Appendix D1)	Automatic cycle termination testing methodology	
Test Load	DOE	DOE	IEC/AHAM
Permitted Number of Test Runs per Test Cloth.	Less than 25 test runs for individual test cloth.	Less than 25 test runs for individual test cloth.	Less than 80 test runs for individual test cloth. Weighted average age of test load between 30 and 50 test runs.

TABLE III.3—TESTS METHODS FOR DOE TESTING—Continued

Test condition	DOE test procedure (Appendix D1)	Automatic cycle termination testing methodology	
Test Load	DOE	DOE	IEC/AHAM
Test Load Preconditioning	10 CFR part 430, subpart B, appendix D1, section 2.6.3.	10 CFR part 430, subpart B, appendix D1, section 2.6.3.	AHAM Standard HLD–1–2009 Section 3.2.3.
Test Load Normalization	N/A	N/A	After each 9 test cycles, normalize using AHAM Standard HLD–1–2009 Section 3.2.3.
Cycle and Settings Used for Test	Timed Dry Cycle, Maximum Temperature (if separately selectable).	"Normal" Automatic Dry Cycle; Maximum Temperature (if separately selectable); "Normal" or "Medium" Dryness (or, if no such designations, at mid-point between min. and max. settings)	
Starting RMC of Test Load	57.5 ± 3.5 percent	57.5 ± 0.33 percent	
RMC of Test Load at Which Test is Stopped.	Stopped manually at 2.5–5 percent RMC.	Allowed to run until completion of automatic cycle. Must be below 2-percent RMC or additional test with highest dryness level setting must be run.	Allowed to run until completion of automatic cycle. Must be below 5-percent RMC or additional test with highest dryness level setting must be run.
Cool Down	Clothes dryer not permitted to advance into cool down.	Cool down period included in automatic cycle test	
Field Use Factor (multiplied by per-cycle energy consumption to account for over drying).	= 1.04 for automatic cycle termination dryers = 1.18 for timer dryers.	No field use factor for automatic cycle termination dryers. = 1.18 for timer dryers	

For each specific testing methodology described above, DOE conducted a series of three identical tests for each model to evaluate the repeatability of test results. The results, presented in Table III.4, show both the average measured CEF for each test unit and the percentage change in the measured CEF for the automatic cycle termination tests as compared to appendix D1. For the automatic cycle termination tests using the DOE test load, all of the tests resulted in a lower measured CEF (*i.e.,* higher per-cycle energy use) compared to the DOE test procedure, ranging from a 3.5 percent to 41.9 percent decrease in CEF. Similarly, for the automatic cycle termination tests using the IEC/AHAM test load, all of the tests resulted in a lower measured CEF compared to the DOE test procedure, ranging from a 6.1 percent to 40.3 percent decrease. In addition, the majority of tested units had a lower CEF for the automatic cycle termination test with the IEC/AHAM test load than with the DOE test load. DOE notes that for this series of tests, it did not make any modifications to the water used to wet the test loads. As discussed in section III.B.4 of this notice, DOE subsequently conducted testing with modifications to the water used to wet the test loads.

TABLE III.4—DOE TEST PROCEDURE AND AUTOMATIC CYCLE TERMINATION TEST RESULTS

Product class	Test unit	DOE test procedure (Appendix D1)	Automatic cycle termination—DOE test load		Automatic cycle termination—IEC/AHAM test load	
		CEF (*lbs/kWh*)	CEF (*lbs/kWh*)	% Change	CEF (*lbs/kWh*)	% Change
Vented Electric Standard	1	3.58	3.16	−11.6	3.13	−12.6
	2	3.93	2.73	−30.6	2.76	−29.8
	3	3.83	3.49	−9.1	3.08	−19.6
	4	3.71	3.48	−6.1	3.44	−7.3
	5	3.90	3.51	−10.0	3.40	−12.9
	6	3.80	2.71	−28.7	2.42	−36.3
	7	3.84	3.06	−20.2	3.02	−21.3
	8	3.71	3.11	−16.1	2.97	−19.9
	Avg	3.79	3.16	−16.6	3.03	−20.0
Vented Electric Compact (240V)	9	3.53	3.32	−6.1	3.24	−8.4
	10	3.56	2.27	−36.1	2.12	−40.3
	Avg	3.54	2.79	−21.1	2.68	−24.4
Vented Electric Compact (120V)	11	3.75	2.18	−41.9	2.42	−35.6
Vented Gas	12	3.43	2.70	−21.3	2.66	−22.4
	13	3.31	2.87	−13.3	2.64	−20.2
	14	3.49	3.07	−12.0	2.93	−16.2

TABLE III.4—DOE TEST PROCEDURE AND AUTOMATIC CYCLE TERMINATION TEST RESULTS—Continued

Product class	Test unit	DOE test procedure (Appendix D1)	Automatic cycle termination—DOE test load		Automatic cycle termination—IEC/AHAM test load	
		CEF (*lbs/kWh*)	CEF (*lbs/kWh*)	% Change	CEF (*lbs/kWh*)	% Change
	15	3.39	2.69	−20.5	2.64	−22.0
	16	3.37	3.25	−3.5	2.99	−11.0
	17	3.37	2.94	−12.7	2.89	−14.3
	Avg	3.39	2.92	−13.9	2.79	−17.7
Ventless Electric Compact (240V)	18	2.98	2.73	−8.4	2.63	−11.9
Ventless Electric Combination Washer/Dryer	19	2.81	2.70	−3.9	2.44	−13.3
	20	2.28	2.19[1]	−3.9	2.14	−6.1
	Avg	2.54	2.45	−3.9	2.29	−9.7

Table III.5 presents the average final RMC from the automatic cycle termination tests with both the DOE and IEC/AHAM test loads, as well as the cycle settings used for each test unit. DOE notes that for nearly all of the test units, the average final RMC is higher for the tests using the IEC/AHAM test load. The higher measured per-cycle energy use and final RMC for the IEC/AHAM test load compared to the DOE test load is likely due to the ability of the IEC/AHAM test load to retain more water during the drying process than the DOE test load, which gives off moisture more readily and terminates the drying cycle sooner. In addition, as discussed above, clothes dryers with automatic termination sensing control systems may be designed to stop the cycle when a load of varying weights, composition, and size has a higher RMC than the RMC obtained using the DOE test load.

TABLE III.5—AUTOMATIC CYCLE TERMINATION TEST RESULTS—FINAL RMC

Product class	Test unit	Automatic cycle setting	Automatic cycle termination—final RMC (%)	
			DOE load	IEC/AHAM load
Vented Electric Standard	1	Normal Cycle, High Temp, Normal Dry	1.3	2.2
	2	Cottons Cycle, High Heat, Optimum Dry	0.7	1.5
	3	Cotton/Normal Cycle, Medium Heat, Normal Dry.	0.6	1.3
	4	Sensor Normal Cycle, Medium Temp	0.7	3.1
	5	Normal Cycle	0.9	3.9
	6	Energy Preferred Plus Cycle, High Temp	1.9	2.4
	7	Energy Preferred Plus Cycle, High Heat	1.3	1.5
	8	Normal Cycle, Medium Heat, Normal Dry	0.4	1.6
Vented Electric Compact (240V)	9	Cottons Cycle, High Temp, Sensor Dry	1.3	4.3
	10	Perm Press/Normal	2.0	3.2
Vented Electric Compact (120V)	11	Perm Press	2.0	2.5
Vented Gas	12	Cottons Regular Cycle, Optimum Dry	1.8	1.6
	13	Normal Cycle, High Temp, Normal Dry	0.9	1.9
	14	Normal Cycle, Medium Heat, Normal Dry	0.7	1.6
	15	Energy Preferred Plus Cycle, High Temp	1.3	2.2
	16	Normal Cycle, Medium Temp, Normal Dry	0.8	2.6
	17	Normal Cycle, Medium Temp, Normal Dry	0.9	2.3
Ventless Electric Compact (240V)	18	Cottons Cycle, High Temp, More Dry[1]	2.0	4.7
Ventless Electric Combination Washer/Dryer	19	Timed Dry Only	.....	.....
	20	Normal Dry	1.7	3.4

[1] Original test using Cottons Cycle, High Temp, Normal Dry gave an average RMC of 3.1 percent for DOE test load, with all tests above 2-percent RMC. As a result, test was re-run using highest dryness setting.

As noted in section III.B.1 of this notice, manufacturers have indicated that test load types and test cloth materials different than those specified in the DOE test procedure do not produce results as repeatable as those obtained using the DOE test load. Therefore, for each test unit, DOE examined the test-to-test variation in CEF among the three tests conducted using the DOE test procedure and among the three tests using the automatic cycle termination test methodology. Table III.6 presents the test-to-test variation expressed as the percent standard error. The analysis shows that the test-to-test variation for the automatic cycle termination tests with the DOE test load is slightly lower than the test-to-test variation with the IEC/AHAM test load, and that both are higher than the test-to-test variation for the DOE test procedure. DOE notes that the more consistent results for the current DOE test procedure are likely due to the use of the timed dry cycle rather than the automatic termination cycles, which may have additional variation in results due to the performance of temperature and moisture sensors and the automatic termination control strategies.

TABLE III.6—CEF TEST-TO-TEST VARIATION

Product class	Test unit	CEF test-to-test variation standard error (%)		
		DOE test procedure (Appendix D1)	Automatic cycle termination—DOE test load	Automatic cycle termination—IEC/AHAM test load
Vented Electric Standard	1	1.35	0.50	2.26
	2	0.57	2.95	0.50
	3	0.89	1.46	0.62
	4	0.37	1.14	6.44
	5	1.02	2.10	0.77
	6	0.46	0.72	3.68
	7	0.70	2.20	1.59
	8	1.12	0.16	1.73
	Avg	0.81	1.40	2.20
Vented Electric Compact (240V)	9	1.60	4.25	2.42
	10	0.18	5.70	4.39
	Avg	0.89	4.98	3.40
Vented Electric Compact (120V)	11	0.51	2.12	2.25
Vented Gas	12	1.31	0.48	3.07
	13	0.82	0.81	1.95
	14	2.08	1.58	0.92
	15	1.23	2.08	1.73
	16	0.61	0.68	1.91
	17	0.52	2.73	1.94
	Avg	1.10	1.39	1.92
Ventless Electric Compact (240V)	18	0.32	2.00	1.50
Ventless Electric Combination Washer/Dryer	19	0.75	0.55	0.16
	20	0.90	3.22	1.58
	Avg	0.82	1.88	0.87
Total Average	.....	0.87	1.87	2.07

To evaluate the effect of test load composition on repeatability, DOE then ran appendix D1 again for a subset of 10 of the clothes dryers in its test sample, using the IEC/AHAM test cloth instead of the DOE test cloth. For each of these units, DOE conducted three repeat tests. DOE believes that using the timed dry cycle and requiring that the dryer be stopped manually allow for better evaluation of the actual test load by limiting other factors, such as automatic termination sensor performance, that may contribute to variability of results from test to test. The results from this testing, presented in Table III.7, show an average test-to-test variation in CEF (expressed in terms of standard error) of 1.02 percent for the IEC/AHAM test load as compared to the 0.87 percent test-to-test variation for the DOE timed dry test procedure with the DOE test load, presented above in Table III.6.

TABLE III.7—CEF TEST-TO-TEST VARIATION FOR APPENDIX D1 WITH IEC/AHAM TEST LOADS

Product class	Test unit	Timed dry—IEC/AHAM test load—CEF test-to-test standard error (%)
Vented Electric Standard	1	1.42
	3	1.21
	6	1.28
	8	0.96
Vented Electric Compact (240V)	9	0.90
	10	1.28
Vented Electric Compact (120V)	11	0.31
Vented Gas	13	1.17
	14	1.10
	17	0.55
Average	.....	1.02

DOE notes that in addition to the use of the IEC/AHAM test load producing less repeatable results from test to test, the reproducibility of test results from lab to lab must also be considered because different test laboratories may be using different lots of test cloth. To evaluate the reproducibility of test results from lab to lab, DOE conducted testing of 9 units at an independent test laboratory with different lots of the DOE and IEC/AHAM test loads using the automatic cycle termination test method. The results, presented below in Table III.8, show that the use of the IEC/AHAM test load also results in lower reproducibility of test results than the use of the existing DOE test load.

TABLE III.8—LAB-TO-LAB REPRODUCIBILITY OF AUTOMATIC CYCLE TERMINATION TEST RESULTS

Product class	Test unit	Automatic cycle termination, DOE test load—average CEF			Automatic cycle termination, IEC/AHAM Test load—average CEF		
		DOE lab	Independent lab	% Difference	DOE lab	Independent lab	% Difference
Vented Electric Standard	1	3.10	3.16	2.2	2.85	3.13	9.8
	2	2.73	3.02	10.8	2.76	2.79	1.0
Vented Electric Compact (240V)	10	2.26	2.27	0.3	2.12	2.12	0.0
Vented Gas	13	2.86	2.87	0.4	2.87	2.64	7.8
	15	2.72	2.69	1.0	2.73	2.64	3.2
	16	3.29	3.25	1.2	3.23	2.99	7.2
	17	3.03	2.94	2.8	3.03	2.89	4.5
Ventless Electric Compact (240V)	18	2.90	2.73	6.0	2.74	2.63	4.2
Ventless Electric Combination Washer/ Dryer	20	2.19	2.23	2.0	Not Tested	Not Tested	.....
Average	.....	.....	.....	3.0	.....	.....	4.7

3. Energy Consumption Versus RMC

As noted in section III.B.2 of this notice, the automatic cycle termination test method using the DOE test load resulted in a lower measured CEF value compared to the CEF measured using appendix D1. As part of the automatic cycle termination testing discussed in section III.B.2, DOE tested a number of units in the test sample at an independent test laboratory that measured and recorded the energy consumption and an estimated instantaneous RMC of the test load throughout the test cycle. The estimated RMC was determined based on the weight of the test load, measured in place during the test cycle, and the rotation of the drum. Based on this testing, DOE decided to develop a field use factor to account for the over-drying energy consumption using the automatic cycle termination test method with the DOE test load at the end of the cycle when the load is dried below 2-percent RMC.

Using the independent test laboratory's data, DOE evaluated the measured energy consumption at different times during the cycle—when the test load initially reached 5-percent RMC, when it reached 2-percent RMC, and at the end of the cycle (including cool down). The test data, presented below in Table III.9, show that the energy consumption measured over a full automatic termination dry cycle is 11–72 percent greater than the energy consumption during the test cycle when the test load initially reaches 5-percent RMC, and 4–62 percent greater than the energy consumption when the test load initially reaches 2-percent RMC (before any moisture regain during cool down/tumbling). DOE also noted that while the final RMC of the DOE test load using the automatic cycle termination test method was between 0.4 percent and 2.0 percent at the completion of the test cycle for all of the clothes dryers in DOE's test sample, this RMC was achieved either after the end of a cool-down period, during which the dryer tumbles with no added heat after the conclusion of the heated drying, or after an extended period of operation at nearly 0-percent RMC when the heater is cycled off and on. The independent test laboratory's data showed that during cool-down or non-heated tumbling, the test load regains moisture from the room air. As a result, the final RMC of the test load at the completion of the cycle after the cool-down/tumbling period is higher than the RMC of the load when the heater turns off for the final time.

TABLE III.9—MEASURED AUTOMATIC CYCLE TERMINATION ENERGY CONSUMPTION AT SPECIFIC RMC LEVELS

Product class	Test unit	Automatic cycle termination sensor technology	Energy consumption (*kWh*)		
			5% RMC	2% RMC	End of cycle (measured RMC (%)[1]
Vented Electric Standard	1	Moisture	1.945	2.070	2.624 (1.2)
	2	Temperature	2.068	2.233	3.119 (0.9)
	4	Moisture	2.160	2.318	2.405 (0.7)
	6	Moisture	2.091	2.280	3.141 (1.9)
Vented Electric Compact (240V)	10	Temperature	0.823	0.875	1.418 (2.0)
Vented Gas	13	Moisture	2.375	2.569	2.905 (0.8)
	15	Moisture	2.347	2.532	3.161 (1.2)
	17	Moisture	2.300	2.482	2.843 (1.2)

[1] As noted above, the test load regained moisture during the cool-down/tumbling period.

Figure III.2 presents the measured energy consumption during the test cycle for the units tested at the independent testing laboratory. The regions of the graphs that have a nearly horizontal slope correspond to periods when the clothes dryer is tumbling with no heat. DOE notes that most clothes dryers have a temperature set point, likely based on measurements from a temperature sensor in the exhaust duct, at which point the heater will cycle on and off. At the end of the cycle, the nearly horizontal slope corresponds to the cool-down period.

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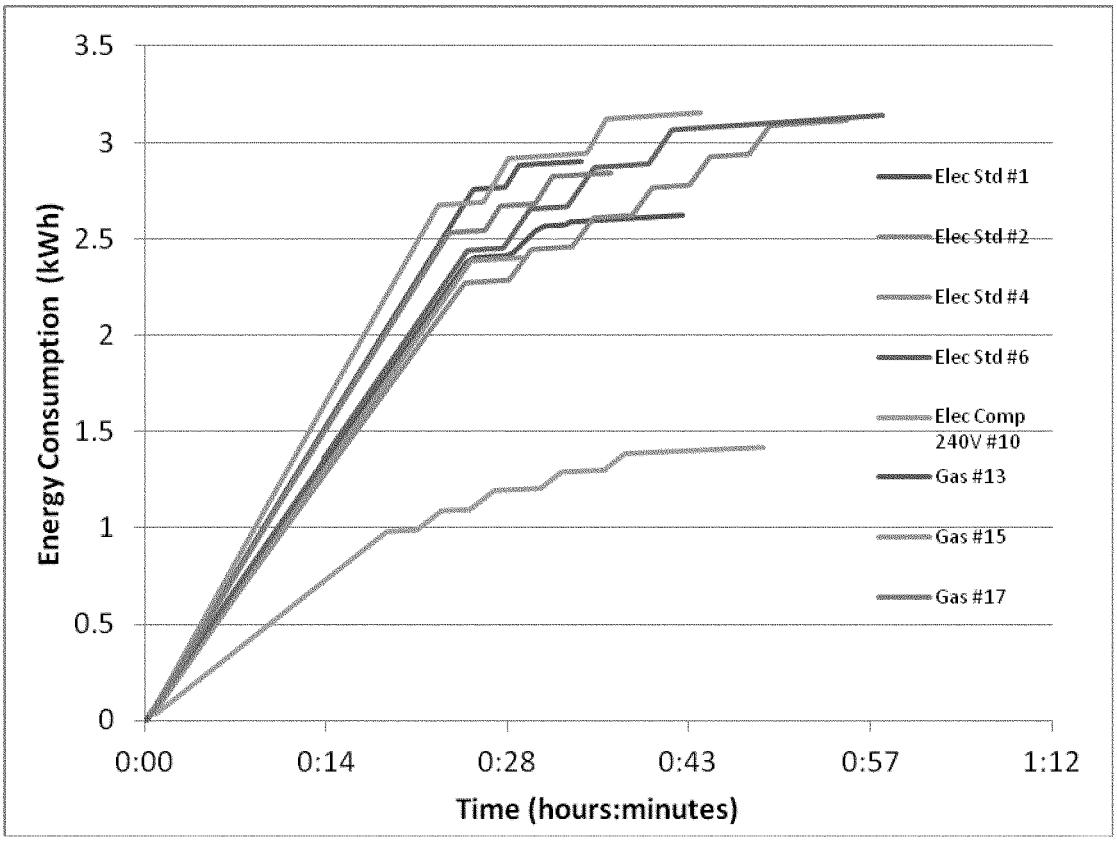

Figure III.2 DOE Automatic Cycle Termination Test Energy Consumption Results for the Full Cycle

Figure III.3 through Figure III.5 present, for each product class, the latter part of the test cycle when the test load is nearly dry. Each curve starts where the test load has initially reached 5-percent RMC. The curves also identify where the test load initially reaches 2-percent RMC. DOE noted that for all of the dryers tested at the independent test laboratory, the DOE test load reached 2-percent RMC before the clothes dryer initially began cycling the heater on and off.

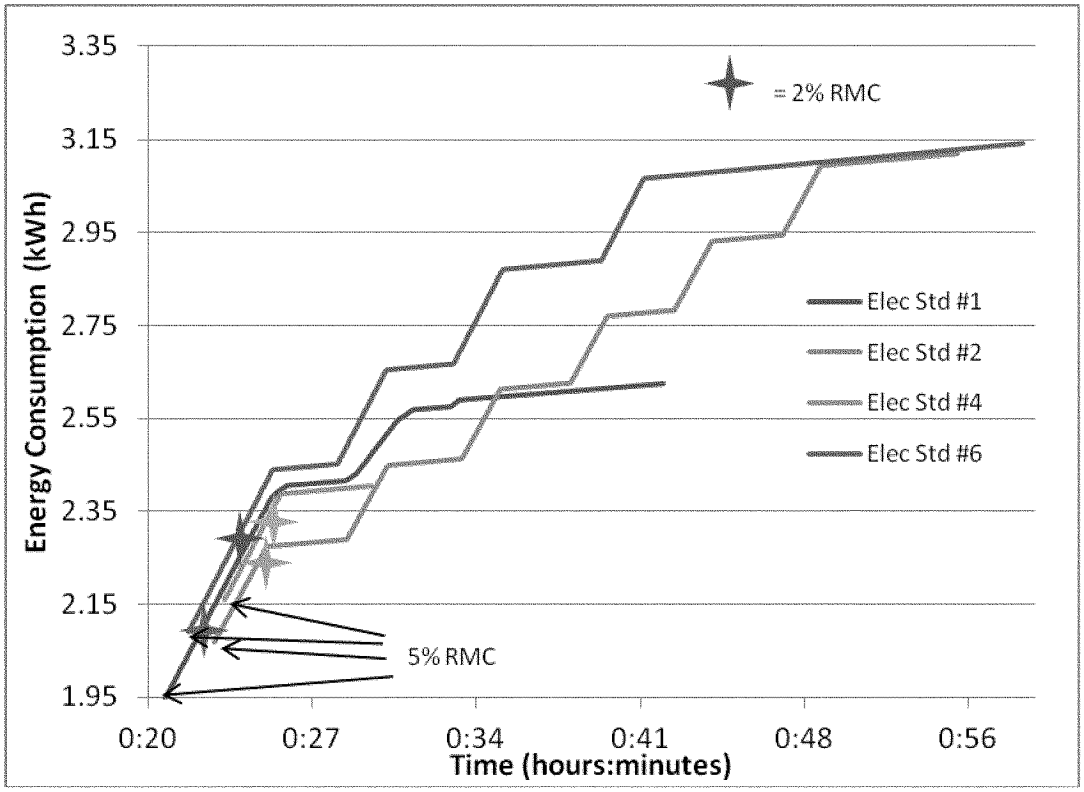

Figure III.3 Vented Electric Standard Dryer Test Cycle Energy Consumption Below 5-percent RMC

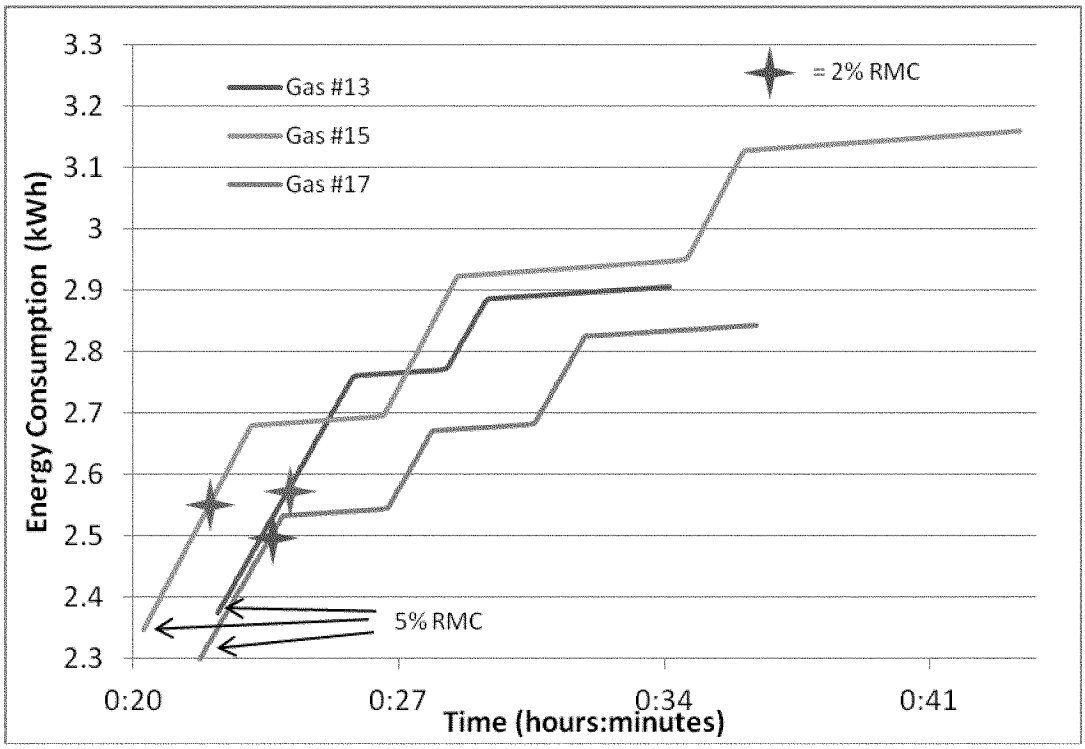

Figure III.4 Vented Gas Dryer Test Cycle Energy Consumption Below 5-percent RMC

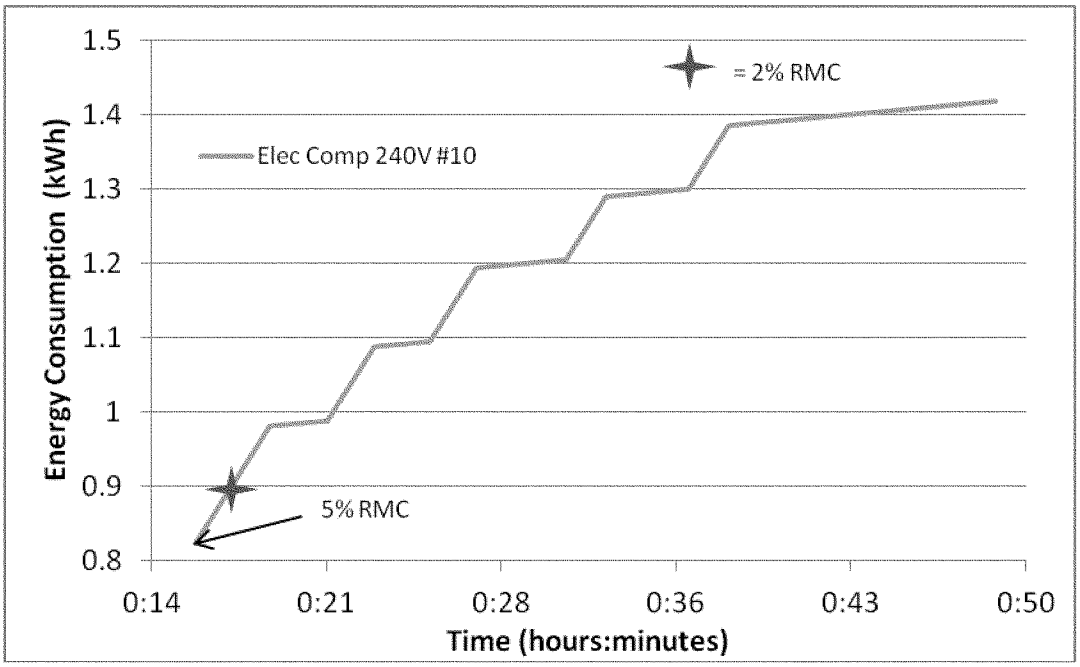

Figure III.5 Vented Electric Compact (240V) Dryer Test Cycle Energy Consumption below 5-percent RMC

Figure III.6 shows the measured energy consumption as a function of RMC for the portion of the test cycle below 5-percent RMC for two vented electric standard clothes dryers. The cycles proceed in time from the right side of the curves, with the RMC generally decreasing as energy consumption increases until the start of any cool down or tumbling. The data show that the cool-down/tumbling period can contribute a significant amount of energy consumption associated with over-drying and moisture regain when using the DOE test load. DOE observed that these two test units, both of which used the same moisture sensor technology and dried the test load to final RMCs of close to 1 percent at the end of the cycle, had significantly different total measured energy consumption. One of these test units achieved this final RMC with only a brief cool-down period, while the other test unit repeatedly heated, tumbled, and regained moisture before the final cool down. DOE believes that the difference in energy consumption between these two units is most likely a function of the control strategy rather than the accuracy of the sensors.

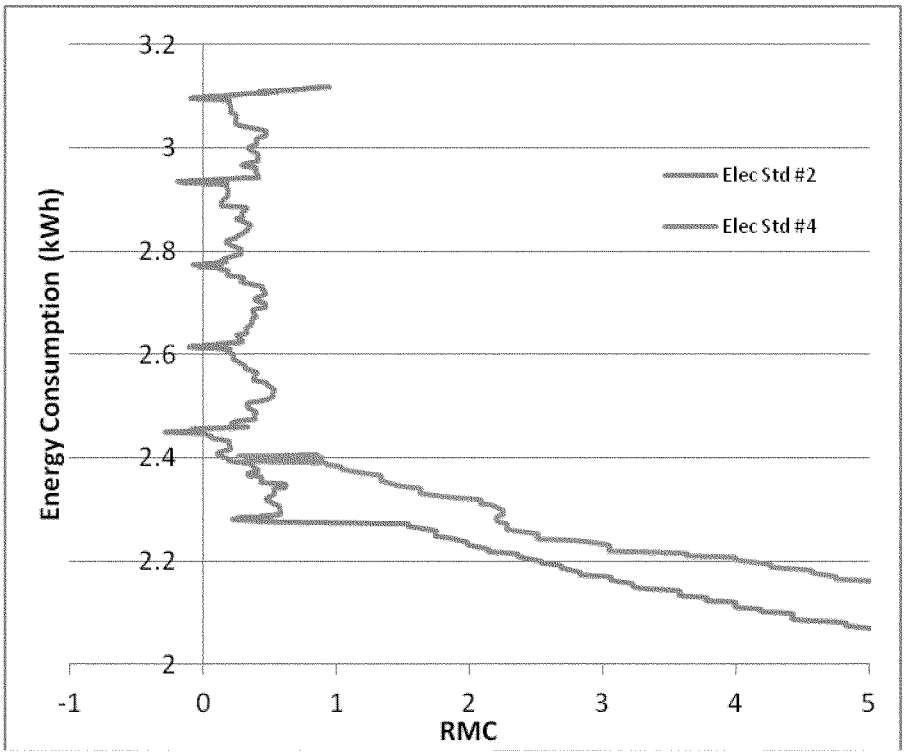

Figure III.6 Comparison of Energy Consumption versus RMC at the End of the Cycle for Two Representative Vented Electric Standard Dryers[9]

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DOE conducted further analysis to develop an appropriate field use factor to account for the measured energy consumption at the end of the automatic termination cycle below 2-percent RMC using the DOE test load (including any cool-down/tumbling period). Using the data presented in Table III.9, DOE calculated a field use factor of 0.80 for automatic termination control dryers by taking the average of the difference between the measured energy consumption to initially reach 2-percent RMC and the measured energy consumption at the end of the test cycle. The results of this analysis showing the application of the 0.8 field use factor are presented in Table III.10.

TABLE III.10—AUTOMATIC CYCLE TERMINATION TEST RESULTS WITH ADJUSTED FIELD USE FACTOR

Product class	Test unit	Per-cycle energy consumption (*kWh*)		
		2% RMC	End of test—measured	End of test—field adjusted
Vented Electric Standard	1	2.070	2.624	2.099
	2	2.233	3.119	2.495
	4	2.318	2.405	1.924
	6	2.280	3.141	2.513
Vented Electric Compact (240V)	10	0.875	1.418	1.134
Vented Gas	13	2.569	2.905	2.324
	15	2.532	3.161	2.528
	17	2.482	2.843	2.274

4. Water Supply Testing

In the August 2011 RFI, DOE noted that the IEC is currently revising its test standard for clothes dryers, IEC Standard 61121. 76 FR 50145, 50147 (Aug. 12, 2011). As part of the IEC Standard 61121 Fourth Edition Committee Draft for Vote (IEC Standard 61121 CDV), the most recent version available at the time of the August 2011 RFI analysis, the IEC noted that the characteristics of the water used for wetting the test load prior to the test, particularly the conductivity, can influence the test results when testing automatic cycle termination clothes dryers with moisture sensors. Clothes dryers with moisture sensors use conductivity sensor bars to determine the amount of moisture in the load when the load comes in contact with the sensors. DOE more recently learned that IEC Standard 61121 Fourth Edition published in February 2012 using the same methodology provided in IEC Standard 61121 CDV. Table III.11 provides the characteristics of either soft

[9] The apparent excursions below 0-percent RMC result from the method used to calculate instantaneous RMC, which may be less accurate at very low RMCs.

or hard water to be used for appliance testing under IEC Standard 61121.

TABLE III.11—IEC STANDARD 61121 REQUIREMENTS FOR COMPOSITION OF SOFT AND HARD WATER FOR CLOTHES DRYER TESTING

Property	Unit	Water type	
		Standard soft water	Standard hard water
Total hardness	Millimols per liter (mmol/l) (Ca^{2+}/Mg^{2+})	0.50 ± 0.20	2.50 ± 0.20
Conductivity (at 20 °C)	Microsiemens per centimeter (μS/cm)	150 ± 50	750 ± 150

In the August 2011 RFI, DOE requested information and data on these effects of the characteristics of the water used to wet the test load on the measured efficiency, as well as any potential testing burden associated with the requirements for modifying the water supply used for wetting the test load. DOE did not receive any comments or information on this issue. DOE conducted testing to evaluate the effects of using supply water modified to meet the specifications in the IEC Standard 61121 on the measured efficiency compared to using supply water according to the requirements of appendix D1. For this series of tests, DOE conducted tests on 16 units using the same automatic cycle termination methodology presented in Table III.3, except that the water used to wet the test load prior to the test met the conditions presented in Table III.8 for standard soft water. DOE selected the soft water requirements from IEC Standard 61121 rather than the hard water requirements to more closely match the existing DOE clothes dryer test procedure, which also requires the use of soft water.[10] For each test method, DOE again conducted three identical tests for each test units. The test results, presented in Table III.12 and Table III.13, did not show a correlation between the average measured CEF and water supply specifications for the automatic cycle termination tests with either the DOE or IEC/AHAM test loads.

TABLE III.12—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—DOE TEST CLOTH

Product class	Test unit	Appendix D1	Automatic cycle termination, Appendix D1 water—DOE test cloth		Automatic cycle termination, IEC soft water—DOE test cloth	
		CEF (*lbs/kWh*)	CEF (*lbs/kWh*)	% Change	CEF (*lbs/kWh*)	% Change
Vented Electric Standard	1	3.58	3.16	−11.6	3.15	−11.9
	3	3.83	3.49	−9.1	3.44	−10.3
	4	3.71	3.48	−6.1	3.45	−6.9
	6	3.80	2.71	−28.7	2.68	−29.5
	7	3.84	3.06	−20.2	3.05	−20.7
	8	3.71	3.11	−16.1	3.24	−12.9
	Avg	3.75	3.17	−15.3	3.17	−15.3
Vented Electric Compact (240V)	9	3.53	3.32	−6.1	3.32	−6.2
	10	3.56	2.27	−36.1	2.37	−33.4
	Avg	3.54	2.79	−21.1	2.84	−19.8
Vented Electric Compact (120V)	11	3.75	2.18	−41.9	2.27	−39.6
Vented Gas	13	3.31	2.87	−13.3	2.91	−12.2
	14	3.49	3.07	−12.0	3.24	−7.3
	15	3.39	2.69	−20.5	2.77	−18.2
	16	3.37	3.25	−3.5	Not Tested	Not Tested
	17	3.37	2.94	−12.7	2.92	−13.2
	Avg	3.39	2.97	−12.4	2.96	−12.7
Ventless Electric Compact (240V)	18	2.98	2.73	−8.4	2.85	−4.3
Ventless Electric Combination Washer/ Dryer	20	2.28	2.19	−3.9	2.19	−3.9

TABLE III.13—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—IEC/AHAM TEST CLOTH

Product class	Test unit	Appendix D1	Automatic cycle termination, Appendix D1 water—IEC/AHAM test cloth		Automatic cycle termination, IEC soft water—IEC/AHAM test cloth	
		CEF (*lbs/kWh*)	CEF (*lbs/kWh*)	% Change	CEF (*lbs/kWh*)	% Change
Vented Electric Standard	1	3.58	3.13	−12.6	3.16	−11.8
	3	3.83	3.08	−19.6	3.13	−18.3
	4	3.71	3.44	−7.3	3.49	−5.8
	6	3.80	2.42	−36.3	2.58	−32.2
	7	3.84	3.02	−21.3	2.96	−23.0

[10] 10 CFR part 430, subpart B, appendix D1, section 2.6.3 requires the use of soft water with 17 parts per million hardness or less.

TABLE III.13—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—IEC/AHAM TEST CLOTH—Continued

Product class	Test unit	Appendix D1	Automatic cycle termination, Appendix D1 water—IEC/AHAM test cloth		Automatic cycle termination, IEC soft water—IEC/AHAM test cloth	
		CEF (*lbs/kWh*)	CEF (*lbs/kWh*)	% Change	CEF (*lbs/kWh*)	% Change
	8	3.71	2.97	−19.9	3.02	−18.5
	Avg	3.75	3.01	−19.5	3.06	−18.3
Vented Electric Compact (240V)	9	3.53	3.24	−8.4	3.22	−8.8
	10	3.56	2.12	−40.3	2.05	−42.3
	Avg	3.54	2.68	−24.4	2.64	−25.5
Vented Electric Compact (120V)	11	3.75	2.42	−35.6	2.48	−33.8
Vented Gas	13	3.31	2.64	−20.2	2.73	−17.5
	14	3.49	2.93	−16.2	2.82	−19.2
	15	3.39	2.64	−22.0	2.74	−19.3
	16	3.37	2.99	−11.0	3.08	−8.3
	17	3.37	2.89	−14.3	2.85	−15.3
	Avg	3.39	2.82	−16.7	2.85	−15.9
Ventless Electric Compact (240V)	18	2.98	2.63	−11.9	2.81	−5.6
Ventless Electric Combination Washer/ Dryer	20	2.28	2.14	−6.1	2.15	−5.8

Table III.14 presents the average final RMC for water supply investigative tests. Similar to the measured CEF discussed above, there was no definitive correlation between the average measured final RMC and the water supply specifications.

TABLE III.14—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—FINAL RMC

Product class	Test unit	Final RMC (%)					
		DOE test cloth			IEC/AHAM test cloth		
		Appendix D1 water	IEC soft water	% Change	Appendix D1 water	IEC soft water	% Change
Vented Electric Standard	1	1.3	1.2	−7.7	2.2	2.2	0.0
	3	0.6	0.6	0.0	1.3	1.2	−7.7
	4	0.7	0.8	14.3	3.1	3.5	12.9
	6	1.9	1.9	0.0	2.4	2.7	12.5
	7	1.3	1.1	−15.4	1.5	1.2	−20.0
	8	0.4	0.5	25.0	1.6	1.3	−18.8
Vented Electric Compact (240V)	9	1.3	1.3	0.0	4.3	4.4	2.3
	10	2.0	2.0	0.0	3.2	3.3	3.1
Vented Electric Compact (120V)	11	2.0	1.5	−25.0	2.5	2.1	−16.0
Vented Gas	13	0.9	0.9	0.0	1.9	1.9	0.0
	14	0.7	0.8	14.3	1.6	1.6	0.0
	15	1.3	1.5	15.4	2.2	2.2	0.0
	16	0.8	Not Tested	.....	2.6	2.7	3.8
	17	0.9	0.9	0.0	2.3	1.9	−17.4
Ventless Electric Compact (240V)	18	2.0	2.4	20.0	4.7	7.1	51.1
Ventless Electric Combination Washer/ Dryer	20	1.7	1.5	−11.8	3.4	3.4	0.0

Table III.15 presents the test-to-test variation for each water supply investigative test. DOE noted that there was again no definitive correlation between the test-to-test variation and whether the water supply was unmodified or modified.

TABLE III.15—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—CEF TEST-TO-TEST VARIATION

Product class	Test unit	CEF Test-to-test variation standard error (%)					
		DOE Test cloth			IEC/AHAM Test cloth		
		Appendix D1 water	IEC Soft water	% Change	Appendix D1 water	IEC Soft water	% Change
Vented Electric Standard	1	0.50	1.15	130.0	2.26	2.65	17.3
	3	1.46	2.03	39.0	0.62	3.94	535.5
	4	1.14	0.04	−96.5	6.44	1.13	−82.5

TABLE III.15—AUTOMATIC CYCLE TERMINATION TESTS—WATER SUPPLY INVESTIGATION—CEF TEST-TO-TEST VARIATION—Continued

Product class	Test unit	CEF Test-to-test variation standard error (%)					
		DOE Test cloth			IEC/AHAM Test cloth		
		Appendix D1 water	IEC Soft water	% Change	Appendix D1 water	IEC Soft water	% Change
	6	0.72	3.93	445.8	3.68	4.81	30.7
	7	2.20	No Repeat Tests	.....	1.59	No Repeat Tests	.....
	8	0.16	2.49	1456.3	1.73	0.20	−88.4
	Avg	1.03	1.93	87.4	2.72	2.55	−6.3
Vented Electric Compact (240V)	9	4.25	0.04	−99.1	2.42	2.23	−7.9
	10	5.70	1.05	−81.6	4.39	4.62	5.2
	Avg	4.98	0.54	−89.2	3.40	3.43	0.9
Vented Electric Compact (120V)	11	2.12	1.60	−24.5	2.25	0.79	−64.9
Vented Gas	13	0.81	4.42	445.7	1.95	3.91	100.5
	14	1.58	0.54	−65.8	0.92	4.83	425.0
	15	2.08	2.68	28.8	1.73	1.26	−27.2
	16	0.68	Not Tested	.....	1.91	1.12	−41.4
	17	2.73	0.67	−75.5	1.94	0.60	−69.1
	Avg	1.57	2.08	32.5	1.69	2.34	38.5
Ventless Electric Compact (240V)	18	2.00	2.56	28.0	1.50	1.71	14.0
Ventless Electric Combination Washer/ Dryer	20	3.22	3.27	1.6	1.58	0.81	−48.7
Total Average	.....	1.96	1.89	−3.6	2.31	2.31	0.0

DOE determined that the modifications to the water supply specified in IEC Standard 61121 did not have a definitive effect on the measured CEF as compared to the water requirements specified in the existing DOE test procedure. In addition, the repeatability testing showed that the IEC water hardness specifications did not improve overall the test-to-test repeatability.

DOE conducted additional testing on two clothes dryers to evaluate the lab-to-lab reproducibility using both supply water specifications in automatic cycle termination tests with the IEC/AHAM test load. The results, presented in Table III.16, showed that the IEC supply water may produce more reproducible results from lab to lab with the IEC/AHAM test load. DOE notes, however, that the percentage difference in test results from lab to lab is within the test-to-test variation for a given lab using the IEC/AHAM test load (presented in Table III.15). For these reasons, DOE is not proposing amendments in today's NOPR to include in the amendments to appendix D1 the supply water specifications from IEC Standard 61121. If additional test results are made available showing that IEC supply water characteristics produce more repeatable and reproducible test results than the requirements in appendix D1, DOE may consider such amendments in a future test procedure rulemaking.

TABLE III.16—LAB-TO-LAB REPRODUCIBILITY OF AUTOMATIC CYCLE TERMINATION TESTS WITH IEC/AHAM TEST LOAD—WATER SUPPLY INVESTIGATION

Product class	Test unit	Automatic cycle termination, Appendix D1 water—IEC/AHAM test cloth—average CEF			Automatic cycle termination, IEC soft water—IEC/AHAM test cloth—average CEF		
		DOE lab	Independent lab	% Difference	DOE lab	Independent lab	% Difference
Vented Gas	17	3.03	2.89	4.5	2.96	2.85	3.6
Ventless Electric Compact (240V)	18	2.74	2.63	4.2	2.76	2.81	1.9

5. Proposed Amendments

Based on the testing and analysis discussed above, DOE is proposing amendments to the clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1 in today's NOPR to more accurately measure the energy consumption of automatic termination control clothes dryers. The proposed amendments are discussed in detail in the following sections.

Definitions

DOE is proposing in today's NOPR to amend the clothes dryer test procedure to add definitions for both automatic termination control dryers and timer dryers. DOE is proposing to define ''automatic termination control dryer'' as a clothes dryer that can be preset to carry out at least one sequence of operations to be terminated by means of a system assessing, directly or indirectly, the moisture content of the load. An automatic termination control dryer with a supplementary timer or that may also be manually controlled shall be tested as an automatic termination control dryer. DOE is proposing to define ''timer dryer'' as a clothes dryer that can be preset to carry out at least one operation to be terminated by a timer, but may also be manually controlled, and does not

include any automatic termination function.

Test Load

The current DOE test procedure in 10 CFR part 430, subpart B, appendix D1, section 2.7 requires that test loads be prepared with a starting RMC of 57.5 percent ± 3.5 percent. DOE is proposing amendments in today's NOPR to change the starting RMC from 57.5 percent ± 3.5 percent to 57.5 percent ± 0.33 percent. DOE believes that the starting RMC of 57.5 percent ± 0.33 percent, which was used for the testing presented above and originally proposed in the June TP 2010 SNOPR, would produce the most repeatable results, particularly for automatic cycle termination dryers. DOE notes that allowing a wide range in the starting RMC, such as the ± 3.5 percent specified in the current DOE test procedure, would result in significantly different results using the proposed automatic cycle termination test procedure because a test load with a starting RMC of 61 percent would contain approximately 0.6 lbs. of water more than a test load with a starting RMC of 54 percent for standard size loads.

As a result, DOE is specifically proposing to amend 10 CFR part 430, subpart B, appendix D1, section 2.7.1, ''Compact size dryer load,'' and section 2.7.2, ''Standard size dryer load,'' to require that water be extracted from the wet test loads by spinning the load until the moisture content of the load is 52.5–57.5 percent of the bone-dry weight of the test load. Final mass adjustments would be made, such that the moisture content is 57.5 percent ± 0.33 percent by adding water uniformly to the load in a very fine spray. DOE notes that requiring water to be extracted to achieve an RMC between 52.5 percent and 57.5 percent would serve as an initial preparation step prior to the final mass adjustments to obtain a test load with an RMC of 57.5 ± 0.33 percent proposed above.

Test Cycle

DOE is proposing in today's NOPR to change the clothes dryer test cycle specified in 10 CFR part 430, subpart B, appendix D1, section 3.3 to require separate test methods for automatic cycle termination dryers and timer dryers.

For automatic cycle termination dryers, DOE is proposing to amend the clothes dryer test procedure to require the use of the control settings, presented in section III.B.2 of this notice, that were used for DOE testing. Specifically, DOE is proposing to require that the ''normal'' automatic termination cycle program be selected for the test cycle, and that for dryers that do not have a ''normal'' program, the cycle recommended by the manufacturer for drying cotton or linen clothes would be selected. Where the drying temperature can be chosen independently of the program, it would be set to the maximum temperature setting. In addition, the proposed amendments would require that where the dryness level setting can be chosen independently of the program, the dryness level would be set to the ''normal'' or ''medium'' setting. If such designation is not provided, then the dryness level would be set at the mid-point between the minimum and maximum settings. The proposed amendments would also require that the cycle settings used for the test cycle be recorded.

For the reasons explained below, the clothes dryer would then be allowed to run until the completion of the cycle, including any cool-down period. After the cycle is complete, the test load would be weighed to determine the final RMC. If the final RMC is below 2 percent, the test would be considered valid. If the RMC is higher than 2 percent, the test would be considered invalid and would be re-run using the highest dryness level setting. DOE is also proposing in today's NOPR that the measured test cycle energy consumption be multiplied by a field use factor of 0.80 to calculate the per-cycle energy consumption for automatic cycle termination clothes dryers.

DOE is proposing in today's NOPR to measure the full automatic termination cycle, including any cool-down period, to be more representative of actual consumer use. DOE has determined that the proposed provision to include a cool-down period would result in less testing burden than the January 2011 TP Final Rule proposal to stop the test cycle when the heater switches off for the final time immediately before the cool-down period begins (76 FR 972, 998 (Jan. 6, 2011)), which would require the tester to monitor the dryer and possibly run multiple test cycles to determine when the heater has switched off for the final time.

As discussed above, DOE also proposes to base the calculations for automatic termination control dryers on a nominal final RMC of 2 percent. This is a change from the existing test procedure, which requires that the clothes dryer test cycle be stopped when the final RMC is between 2.5 percent and 5 percent. Based on the data submitted in the Joint Petition and DOE's analysis, DOE tentatively concludes that a final RMC of 2 percent using the DOE test load would be more representative of clothes dryers currently on the market and representative of the maximum consumer-accepted final RMC.

DOE is proposing in today's NOPR to revise the field use factor in the per-cycle energy consumption calculation for dryers with automatic termination controls to 0.80 based on the data presented above in section III.B.3. DOE notes that this field use factor would account for the measured energy consumption at the end of the automatic termination cycle drying the DOE test load below 2-percent RMC, which DOE determines to be representative of consumer-acceptable drying levels with loads of varying weights, composition, and size.

As discussed in section III.B.2 of this notice, NEEA supplied DOE with data from its residential laundry field use study, which included 50 households in the northwest United States metered from January 2012 to March 2012. Although the NEEA field study did not provide data to closely determine the final RMC of laundry loads, the study did provide data on the weights of the laundry loads both before and after the drying cycle. As a result, DOE was able to determine the amount of moisture removed from the laundry load during each dry cycle, to compare with the proposed DOE test procedure. The NEEA field study showed that the average initial weight of the laundry load prior to the drying cycle for the average household surveyed was approximately 12.1 lbs, and that, on average, 4.8 lbs of water was removed during the drying cycle. Comparing this to the proposed DOE test procedure for a standard-size test load with a bone-dry weight of 8.45 lbs, the starting RMC of 57.5 percent would result in an initial weight of the test load of approximately 13.3 lbs. The proposed test procedure, which requires that the laundry load be dried to below 2-percent RMC, would require approximately 4.7 lbs of water to be removed from the load during the drying cycle. Based on the information from the NEEA field use study, DOE concludes that the weight of the test load and amount of moisture removed during the drying cycle in the proposed test procedure are fairly representative of consumer use.

Data from the NEEA study also showed that the average household surveyed used the ''normal'' or an equivalent program cycle setting for nearly 60 percent of all drying cycles. The remaining drying cycles used other automatic termination cycle settings, or timed dry or manual cycles. Based on these usage patterns, DOE tentatively

concludes that using the ''normal'' automatic termination program cycle setting for automatic termination control clothes dryers would be most representative of consumer use. DOE is not proposing to require additional program cycle settings, which would also require specifying different load types for each setting, in today's NOPR to minimize testing burden.

For timer dryers, DOE is proposing to use the test method currently specified in 10 CFR part 430, subpart B, appendix D1, section 3.3 with a revised final RMC requirement. The proposed test method would require that the clothes dryer be operated using the highest temperature setting and maximum time setting. The clothes dryer would then be allowed to run until the final RMC of the load is between 1.0 percent and 2.5 percent, at which point the test cycle is stopped without permitting the clothes dryer to advance into the cool-down period. After stopping the test run, test technicians would remove and weigh the test load. DOE is also proposing to add a clarification that the clothes dryer should not be stopped intermittently in the middle of the test cycle for any reason. This clarification would ensure that test technicians are not stopping the dryer intermittently to weigh the test load to check whether it is within the target range for the final RMC. Such a practice would alter the measured results because of the heat loss from the dryer when the cycle is stopped.

DOE is proposing in today's NOPR to include separate calculations for the per-cycle energy consumption for timer dryers. The calculations would be similar to the calculations provided in the current DOE test procedure in 10 CFR part 430, subpart B, appendix D1, sections 4.1–4.3, except that the normalization of the per-cycle energy consumption to represent the energy consumption required to dry the test load to 4-percent RMC would be changed to represent the new target RMC of 2 percent. The per-cycle energy consumption calculation in the current test procedure applies a scaling factor of 53.5 to be representative of the percentage change from the nominal initial RMC of 57.5 percent to the nominal ending RMC of 4 percent. The proposed amendments would change this scaling factor to 55.5 to reflect the new ending RMC of 2 percent. DOE proposes a range of 1.0 percent to 2.5 percent for the allowable ending RMC during the test cycle to reduce testing burden. DOE tentatively concludes that requiring the tester to dry the test load to an exact RMC during the test cycle would be unduly burdensome because it could require the test to be repeated a significant number of times until the exact RMC is achieved. For the test procedure to produce repeatable results, the measured test cycle energy consumption is normalized to calculate the energy consumption required to dry the test load from exactly 57.5-percent RMC to 2-percent RMC, which is representative of clothes dryers currently on the market and of the maximum consumer-accepted final RMC.

DOE proposes in today's NOPR that manufacturers continue to apply the field use factor needed to account for the energy consumption of drying beyond the 2-percent RMC specified in the test procedure. DOE is not proposing any changes to the 1.18 field use factor for timer dryers because DOE is not aware of any data or studies more recent than the studies on which it was originally based that would indicate that this value is not currently representative of consumer use. DOE seeks comment on the field use factors for both automatic termination control dryers and timer dryers in section V.E of this notice.

DOE is not proposing to include the cool-down period as part of the timed dry test cycle because the proposed test method requires drying the load to a specified RMC, at which point the test cycle is stopped by the test technician. DOE has determined that specifying a timed dry cycle that includes the cool-down period to achieve a target final RMC would add significant testing burden on test technicians to determine and preset the appropriate time setting. It would also be difficult to ensure that testing results are repeatable and reproducible because different combinations of timed dry cycle length and cool-down period may be selected to dry a test load to the same final RMC. For these reasons, DOE is not amending the timed dry test cycle to include the cool-down period in today's NOPR.

C. Incorporating by Reference IEC Standard 62301 Second Edition for Measuring Standby Mode and Off Mode Power

The January 2011 TP Final Rule incorporated in the test procedures for clothes dryers relevant provisions from IEC Standard 62301 (First Edition) for measuring standby mode and off mode power. 76 FR 972, 979–80 (Jan. 6, 2011). DOE reviewed the IEC Standard 62301 (First Edition) and concluded that it would be generally applicable to clothes dryers, although some clarification would be needed. Specifically, DOE adopted amendments for standby mode and off mode power measurements to provide a stabilization period of 30 to 40 minutes followed by an energy use measurement period of 10 minutes. 76 FR 986 (Jan.6, 2011). With these clarifications in place, the January 2011 TP Final Rule referenced IEC Standard 62301 (First Edition) for the standby mode and off mode wattage measurements. DOE also incorporated into the clothes dryer test procedure definitions of ''active mode,'' ''standby mode,'' and ''off mode'' based on the definitions provided in IEC Standard 62301 CDV. 76 FR 76 FR 981–85 (Jan. 6, 2011).

IEC Standard 62301 (Second Edition) published on January 27, 2011. Consistent with EPCA requirements for amending test procedures to include standby and off mode procedures, DOE considered IEC Standard 62301 (Second Edition) in today's NOPR for amendments to the standby mode and off mode test procedures for clothes dryers. (42 U.S.C. 6295(gg)(2)(A)) IEC Standard 62301 (Second Edition) is an internationally-accepted test procedure for measuring standby power in residential appliances, and it provides clarification to certain sections as compared to the First Edition, as discussed in the following paragraphs.

Section 4, paragraph 4.4 of the Second Edition revises the power measurement accuracy provisions of the First Edition. A more comprehensive specification of required accuracy is provided in the Second Edition, which depends upon the characteristics of the power being measured. Testers using the Second Edition are required to measure the crest factor and power factor of the input power, and to calculate a maximum current ratio (MCR) (paragraph 4.4.1 of the Second Edition). The Second Edition then specifies calculations to determine permitted uncertainty in MCR. DOE notes, however, that the allowable uncertainty is the same or less stringent than the allowable uncertainty specified in the First Edition, depending on the value of MCR and the power level being measured (see Table III.17 for examples). This change in the allowable uncertainty, however, maintains sufficient accuracy of measurements under a full range of possible measured power levels without placing undue demands on the instrumentation. These power measurement accuracy requirements were based upon detailed technical submissions to the IEC in the development of IEC Standard 62301 Final Draft International Standard (FDIS), which showed that commonly-used power measurement instruments were unable to meet the original requirements for certain types of loads. The incremental testing burden

associated with the additional measurements and calculations is offset by the more reasonable requirements for testing equipment, while maintaining measurement accuracy deemed acceptable and practical by voting members for IEC Standard 62301 (Second Edition). For these reasons, DOE proposes in today's notice to incorporate by reference in 10 CFR part 430, subpart B, appendix D1, section 2.4.7 the power equipment specifications in section 4, paragraph 4.4 of IEC Standard 62301 (Second Edition).

TABLE III.17—COMPARISON OF ALLOWABLE UNCERTAINTY IN MEASURED POWER

Measured Power *(W)*	Allowable Uncertainty *(W)*		
	IEC 62301 (First Edition)	IEC 62301 (Second Edition)	
		MCR = 5	MCR = 15
5.0	0.1	0.1	0.14
2.0	0.04	0.04	0.056
1.0	0.02	0.02	0.028
0.5	0.01	0.02	0.02
0.2	0.01	0.02	0.02

Section 5, paragraph 5.2 of IEC Standard 62301 (Second Edition) maintains the installation and setup procedures incorporated by reference in the clothes dryer test procedure in the January 2011 TP Final Rule from the First Edition. These provisions require that the appliance be prepared and set up in accordance with manufacturer's instructions, and that if no instructions are given, then the factory or ''default'' settings shall be used, or where there are no indications for such settings, the appliance is tested as supplied. Additionally, IEC Standard 62301 (Second Edition) adds certain clarifications to the installation and setup procedures in section 5, paragraph 5.2 of the First Edition regarding products equipped with a battery recharging circuit for an internal battery, as well as instructions for testing each relevant configuration option identified in the product's instructions for use. DOE is not aware of any clothes dryer with an internal battery, or with a recharging circuit for such a battery. DOE also believes that a requirement to separately test each configuration option could substantially increase test burden and potentially conflicts with the requirement within the same section to set up the product in accordance with the instructions for use or, if no such instructions are available, to use the factory or ''default'' settings. Therefore, DOE tentatively concludes that the portions of the installation instructions in section 5, paragraph 5.2 of IEC Standard 62301 (Second Edition) pertaining to batteries and the requirement for the determination, classification, and testing of all modes associated with every combination of available product configuration options (which may be more numerous than the modes associated with operation at the default settings) are not appropriate for the clothes dryer test procedures. Accordingly, DOE is proposing qualifying language in the test procedure amendments in 10 CFR part 430, subpart B, appendix D1, section 2.1 to disregard those portions of the installation instructions.

The Second Edition also contains provisions for the power supply (section 4.3) and power-measuring instruments (section 4.4). Paragraph 4.3.2 requires that the value of the harmonic content of the voltage supply be recorded during the test and reported. As described previously, paragraph 4.4.1 requires the instrument to measure the crest factor and maximum current ratio. Paragraph 4.4.3 requires the instrument to be capable of measuring the average power or integrated total energy consumption over any operator-selected time interval. DOE is aware of commercially available power measurement instruments that can perform each of these required measurements individually. However, DOE is also aware that certain industry-standard instruments, such as the Yokogawa WT210/WT230 digital power meter and possibly others, are unable to measure harmonic content or crest factor while measuring average power or total integrated energy consumption. DOE is concerned that laboratories currently using power-measuring instruments without this capability would be required to purchase, at potentially significant expense, additional power-measuring instruments that are able to perform all these measurements simultaneously. Therefore, DOE proposes in 10 CFR part 430, subpart B, appendix D1, sections 2.3.1.1 and 2.4.7 that if the power-measuring instrument is unable to perform these measurements during the actual test measurement, it would be acceptable to measure the total harmonic content, crest factor, and maximum current ratio immediately before and immediately after the actual test measurement to determine whether the requirements for the power supply and power measurement have been met.

The other major changes in the Second Edition related to the measurement of standby mode and off mode power consumption in covered products involve measurement techniques and specification of the stability criteria required to measure that power. The Second Edition contains more detailed techniques to evaluate the stability of the power consumption and to measure the power consumption for loads with different stability characteristics. According to the Second Edition, the user is given a choice of measurement procedures, including sampling methods, average reading methods, and a direct meter reading method. DOE evaluated these new methods in terms of test burden and improvement in results as compared to the methods adopted in the January 2011 TP Final Rule, which were based on IEC Standard 62301 (First Edition).

In the January 2011 TP Final Rule, DOE adopted provisions requiring that clothes dryer standby mode and off mode power be measured using section 5, paragraph 5.3 of IEC Standard 62301 (First Edition), clarified by requiring the product to stabilize for 30 to 40 minutes and using an energy use measurement period of 10 minutes. Further, for any clothes dryer in which the power varies over a cycle, as described in section 5, paragraph 5.3.2 of the First Edition, the January 2011 TP Final Rule adopted amendments to require the use of the average power approach in section 5, paragraph 5.3.2(a), with a 30- to 40-minute stabilization period and a 10-minute minimum measurement period, as long as the measurement period comprises one or more complete cycles. 76 FR 972, 979–980, 985–986 (Jan. 6, 2011).

For today's notice, to determine the potential impacts of referencing methodology from IEC Standard 62301 (Second Edition) rather than from the First Edition, DOE compared the provisions allowed by each under different scenarios of power consumption stability, as discussed in the following sections.

1. Stable Power Consumption

According to section 5, paragraph 5.3.1 of IEC Standard 62301 (First Edition), after an initial stabilization period of 5 minutes, power consumption is defined as stable if it varies by less than 5 percent over a subsequent measurement period of 5 minutes. In such a case, a direct reading may be made at the end of the measurement period. With the clarifications adopted in the January 2011 TP Final Rule, the total test time would be 40 to 50 minutes (comprised of a 30- to 40-minute stabilization period, followed by a 10-minute period during which the stability criterion could be evaluated and a direct power reading taken.) Alternatively, the tester may select an average power or accumulated energy approach, again with a 30- to 40-minute stabilization period and a 10-minute measurement period. The average power approach would simply require a different reading to be taken from the instrument (true average power instead of a direct reading of instantaneous power), while the accumulated energy approach would require the calculation of power by dividing an accumulated energy by the duration of the measurement period.

In comparison, section 5, paragraph 5.3.4 of IEC Standard 62301 (Second Edition) specifies a direct meter reading method that can be used for stable power consumption, in which a minimum 30-minute stabilization period must be observed, followed by a first power measurement. After an additional period of 10 minutes, a second power measurement is taken. If the average of the two measurements divided by the time interval between them meets certain threshold criteria, then the power consumption is considered to be the average of the two power measurements. Thus, the total test period would still be at minimum 40 minutes. DOE believes that this method likely improves the validity of the test results, as it is a more stringent measure of the stability of the power consumption over a longer period of time than the First Edition requires. However, if the threshold criteria are not met at the end of the test, a different measurement method must be used, increasing test time and complexity. Further, the Second Edition specifies that the direct reading method shall not be used for verification purposes. Both of these qualifications potentially increase test burden as compared to the First Edition, possibly requiring the tester to conduct the more complex methodology of the methods available under the Second Edition.

Section 5, paragraph 5.3.2 of IEC Standard 62301 (Second Edition) identifies a sampling method as the preferred means for all power consumption measurements and the fastest test method when the power is stable. For any non-cyclic power consumption, power readings are initially recorded over a period of at least 15 minutes after energizing the product. Data from the first third of the measurement period are discarded, and stability is evaluated by a linear regression through all power readings in the second two-thirds of the data. If the slope of the linear regression is less than 10 milliwatts per hour (mW/h) for input power less than or equal to 1.0 W, or less than 1 percent of the input power per hour for input power greater than 1.0 W, the power consumption is calculated as the average of the power readings during the second two-thirds of the measurement period. If the slope of the linear regression does not meet these stability criteria, the total period is continuously extended until the stability criteria are met for the second two-thirds of the data. In some cases, this is a more stringent requirement than the stability criteria of IEC Standard 62301 (First Edition). The lack of a definitive test period means that the test duration could extend past 15 minutes for certain products—up to 3 hours is allowed in the Second Edition—and could introduce added test burden as compared to the First Edition.

2. Unstable, Non-Cyclic Power Consumption

Section 5, paragraph 5.3 from IEC Standard 62301 (First Edition), which DOE incorporated by reference in the clothes dryer test procedure in the January 2011 TP Final Rule with clarification, specifies that either an average power method or accumulated energy approach could be used for measuring non-cyclic unstable power consumption. As described previously, this methodology, as adopted in the January 2011 TP Final Rule, would limit total test duration to 40–50 minutes.

In contrast, the Second Edition requires the use of either a sampling method or average reading method for measuring power consumption in standby mode or off mode. The sampling method is the same as described previously, but the measurement period must be at least 60 minutes, and the cumulative average of all data points recorded during the second two-thirds of the total period must fall within a band of ±0.2 percent.

The average reading method in section 5, paragraph 5.3.3 IEC Standard 62301 (Second Edition) comprises both an average power method and accumulated energy method, either of which may be selected for unstable, non-cyclic power. For both methods, a 30-minute stabilization period is specified, followed by two comparison measurement periods of not less than 10 minutes each. The average power values, either measured directly or calculated from accumulated energy during each period, are compared to determine whether they agree to within certain threshold criteria. If the threshold is not achieved, the comparison periods are each extended in approximately equal increments until the threshold is met. If agreement is not achieved after reaching 30 minutes for each comparison period, the sampling method must then be used. Therefore, the minimum test period is 50 minutes, but may extend up to 90 minutes, at which time an additional test may be required.

DOE believes that the stability criteria in either method improves the accuracy and representativeness of the measurement as compared to the First Edition, but would cause the required test time to increase, with a corresponding increase in manufacturer burden due to the additional time and complexity of the test.

3. Cyclic Power Consumption

As noted previously, DOE adopted amendments in the January 2011 TP Final Rule to require that for any clothes dryer in which the power varies over a cycle, the average power approach of section 5, paragraph 5.3.2(a) in IEC Standard 62301 (First Edition) shall be used, with a 30- to 40-minute stabilization period and minimum 10-minute measurement period. The First Edition also requires that at least one or more complete cycles be measured.

In the Second Edition, cyclic power must be measured according to the sampling method in section 5, paragraph 5.3.2, but this method requires a measurement period of at least four complete cycles (for a total of at least 40 minutes) divided into two comparison periods, with stability criteria evaluated by calculating the difference in average power measured in each comparison period divided by the time difference of the mid-point of each

comparison period. Similar to the sampling method for stable power consumption measurements described previously, this ''slope'' must be less than 10 mW/h for input powers less than or equal to 1 W, and less than 1 percent of the input power per hour for input powers greater than 1 W. If the appropriate stability criterion is not met, additional cycles are added to each comparison period until the criterion is achieved. Once stability has been reached, the power consumption is calculated as the average of all readings from both comparison periods. DOE believes that this methodology produces an improved measurement over the methodology from the First Edition, but the test duration could be extended, again potentially introducing issues of increased test burden.

4. Conclusions on Test Methodology

DOE, in evaluating IEC Standard 62301 (Second Edition) in comparison to the First Edition, considers the substantial body of comments on and input to the provisions and methodology that IEC developed as part of its latest revision process. DOE recognizes that, in some cases, test burden and complexity would be increased by requiring the use of the test methods specified in the Second Edition. AHAM and manufacturers involved in the IEC review process have commented that IEC Standard 62301 (Second Edition) test methods improve the accuracy and representativeness of the test measurements and would not be unduly burdensome to conduct. 77 FR 28805, 28812 (May 16, 2012); 76 FR 58346, 58350 (Sept. 20, 2011); 77 FR 13888, 13893 (March 7, 2012). As a result, and for the reasons discussed above, DOE proposes incorporation by reference of the relevant paragraphs of section 5.3 of IEC Standard 62301 (Second Edition) in the clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1, section 3.6.

Further, DOE observes that although the Second Edition allows the choice of multiple test methods for both stable and unstable non-cyclic power consumption, the sampling method provides for a test duration that is approximately the same or similar to the allowable alternative methods and does not require classification of the nature of the power consumption (*e.g.,* stable or unstable, non-cyclic) in advance of the test. By monitoring the variation in power consumption during the test, the test operator could determine whether it is stable or unstable, and thereby establish the required duration of the sampling periods. For cyclic power consumption, the Second Edition also requires the use of the sampling method. Thus, DOE proposes to require in 10 CFR part 430, subpart B, appendix D1, section 3.6 the use of the sampling method in section 5.3.2 of the Second Edition for all standby mode and off mode power measurements.

DOE is also proposing to amend the reference in 10 CFR 430.3 to add IEC Standard 62301 (Second Edition). DOE is not proposing to replace the reference to the First Edition in 10 CFR 430.3, because several test procedures for other covered products not addressed in today's notice incorporate provisions from it. In addition, there are a number of editorial changes necessary in appendix D1 to allow for the correct referencing to the Second Edition. For example, the definition sections need to define the IEC Standard 62301 as the Second Edition instead of the First Edition. Also, there are some section numbering differences in the Second Edition that impact the text of the measurement provisions of the relevant test procedures.

D. Technical Correction to the Calculation of the Per-Cycle Combined Total Energy Consumption

DOE notes that 10 CFR part 430, subpart B, appendix D1, section 4.6, regarding the calculation of the per-cycle combined total energy consumption contains a reference to an incorrect section number. The per-cycle standby mode and off mode energy consumption, E_{TSO}, which is contained in section 4.5, is incorrectly referenced in the per-cycle combined total energy consumption as section 4.7. DOE is proposing in today's NOPR to correct this section number reference.

E. Clarifications to Test Conditions

DOE notes that it received a number of inquiries from independent test laboratories requesting clarification on testing according to the DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D. DOE is proposing amendments in today's NOPR to clarify the cycle settings used for the test cycle and the requirements for the gas supply for gas clothes dryers.

Section 3.3 in 10 CFR part 430, subpart B, appendix D specifies that the maximum temperature setting and, if a tested unit is equipped with a timer, the maximum time setting must be used for the drying test cycle. DOE received an inquiry from an independent test laboratory regarding how to test a clothes dryer that has timed dry cycle length settings, but no temperature settings on the control panel. DOE is proposing to clarify in 10 CFR part 430, subpart B, appendix D, section 3.3, that if the clothes dryer does not have a separate temperature setting selection on the control panel, the maximum time setting should be used for the drying test cycle. In today's NOPR, DOE is proposing to amend 10 CFR part 430, subpart B, appendix D1, to require separate test methods for timer dryers and automatic termination control dryers. Because the proposed timed dry test method maintains the same cycle settings as specified in 10 CFR part 430, subpart B, appendix D, DOE is also proposing to include the clarification discussed above in section 3.3.1 in 10 CFR part 430, subpart B, appendix D1, for the timer dryer test method. Because the proposed test method for automatic termination control dryers requires using an automatic cycle termination program where the drying temperature and dryness level settings are modified only if they can be chosen independently of the cycle program, DOE is not proposing to include the clarification discussed above.

DOE also received an inquiry regarding how to test a clothes dryer that has an optional cycle setting, other than the temperature and time settings, that is activated by default in the condition as shipped by the manufacturer. DOE is proposing to clarify in both 10 CFR part 430, subpart B, appendix D, section 3.3, and appendix D1, section 3.3.1, that the test procedures specify requirements only for the temperature setting and time setting, and do not specify modifications to any other optional settings that do not affect the temperature setting and time setting. Similarly in 10 CFR part 430, subpart B, appendix D1, section 3.3.2, DOE is proposing to clarify for automatic termination control dryers, the test procedures specify requirements only for the automatic termination cycle program, temperature setting, and dryness setting, and do not specify modifications to any other optional settings that do not affect the automatic termination cycle program, temperature setting, and dryness setting.

Section 2.3.2 in 10 CFR part 430, subpart B, appendix D and appendix D1, specifies that gas supply to the clothes dryer should be maintained at a normal inlet test pressure at 7 to 10 inches of water column, and that the hourly British thermal unit (Btu) rating of the burner shall be maintained within ±5 percent of the rating specified by the manufacturer. DOE received an inquiry from an independent testing laboratory noting that during its testing, the gas dryer under test did not meet the requirement to maintain the Btu rating within 5 percent of the rating specified

by the manufacturer under the allowable range in gas inlet test pressure. DOE is proposing to add a clarification in both 10 CFR part 430, subpart B, appendix D and appendix D1 that if the requirement to maintain the hourly Btu rating of the burner within ±5 percent of the rating specified by the manufacturer cannot be achieved under the allowable range in gas inlet test pressure, the orifice of the gas burner should be modified as necessary to achieve the required Btu rating.

Section 2.3.2 in 10 CFR part 430, subpart B, appendix D and appendix D1, also specifies that if a clothes dryer is equipped with a gas appliance pressure regulator, the regulator outlet pressure at the normal test pressure shall be approximately that recommended by the manufacturer. DOE notes that the test procedures for similar gas heating products, such as gas water heaters, specifies that the regulator outlet pressure must be within ±10 percent of the value specified by the manufacturer. DOE is proposing to clarify the term ''approximately'' by specifying that the regulator outlet pressure shall be within ±10 percent of the value specified by the manufacturer.

F. Effects of Proposed Test Procedure Revisions on Compliance With Standards

In any rulemaking to amend a test procedure, DOE must determine to what extent, if any, the proposed test procedure would alter the measured energy efficiency of any covered product as determined under the existing test procedure. (42 U.S.C. 6293(e)(1)) If DOE determines that the amended test procedure would alter the measured efficiency of a covered product, DOE must amend the applicable energy conservation standard accordingly. (42 U.S.C. 6293(e)(2)) In determining the amended energy conservation standard, the Secretary shall measure, pursuant to the amended test procedure, the energy efficiency, energy use, or water use of a representative sample of covered products that minimally comply with the existing standard. The average of such energy efficiency, energy use, or water use levels determined under the amended test procedure shall constitute the amended energy conservation standard for the applicable covered products. (42 U.S.C. 6293(e)(2)) Models of covered products in use before the date on which the amended energy conservation standard becomes effective (or revisions of such models that come into use after such date and have the same energy efficiency, energy use or water use characteristics) that comply with the energy conservation standard applicable to such covered products on the day before such date shall be deemed to comply with the energy conservation standard. (42 U.S.C. 6293(e)(3)) DOE's authority to amend energy conservation standards does not affect DOE's obligation to issue any final standards as described in 42 U.S.C. 6295. (42 U.S.C. 6293(e)(4))

1. Active Mode

As discussed in section III.E, DOE is only proposing to amend 10 CFR part 430 subpart B, appendix D in today's NOPR to clarify the cycle settings used for testing and the requirements for the gas supply. Because the proposed amendments to appendix D would not change the actual testing method, DOE determined that these proposed amendments would not affect the measured efficiency according to appendix D and would not affect a manufacturer's ability to demonstrate compliance with the current energy conservation standards at 10 CFR 430.32(h)(2).

Because the January 1, 2015 energy conservation standards for clothes dryers are based on CEF as measured according to 10 CFR part 430 subpart B, subpart D1, DOE investigated how the proposed amendments for automatic cycle termination would affect the measured CEF.

In response to the August 2011 RFI, the Joint Petitioners commented that if DOE adopts the petition's proposed test procedure amendments, it must also revise the relevant energy conservation standards to reflect the new test procedure, ensuring that for clothes dryers with effective automatic termination controls, there is no change in stringency of the standards. The Joint Petitioners stated that the procedures in 42 U.S.C. 6293(e)(2) should be used, with the clarification that for the purposes of establishing a representative sample of products, DOE should select a sample of minimally compliant clothes dryers that automatically terminate the drying cycle at 1.5- to 2-percent RMC. The Joint Petitioners stated that by selecting products that terminate at 1.5- to 2-percent RMC, DOE will assure that the revised standard is based upon dryers that do not over-dry and that the tested sample yields valid results under both the current and proposed revised test procedure. The Joint Petitioners also stated that if DOE does not consider dryers that terminate the drying cycle at 1.5- to 2-percent RMC to be a representative sample, the proposed test procedure in the Joint Petition should still be adopted. In that case, the Joint Petitioners stated that DOE could revise the energy conservation standards without limiting the representative sample of dryers based on automatic termination performance. However, the Joint Petitioners noted that this approach would reduce, but not eliminate, the benefits from this test procedure change. (Joint Petition, No. 2 at pp. 6–7)

DOE conducted testing on 20 clothes dryers according to the current DOE clothes dryer test procedure in appendix D1 and then according to the proposed automatic cycle termination test procedure. The results of this testing, presented in Table III.18, showed that specific models resulted in either a lower or higher measured CEF as compared to the measured CEF using the current test procedure, ranging from a 27.4 percent decrease to a 20.4 percent increase in CEF with an average of a 3.8 percent increase. DOE also evaluated the effects of the proposed amendments for the products in DOE's test sample that minimally comply with the existing energy conservation standards (based on rated EF). The results for the 10 minimally compliant units in DOE's test sample showed a 27.4 percent decrease to a 16.9 percent increase in CEF as compared to the CEF using the test procedure in 10 CFR part 430 subpart B, subpart D1, with an average of a 4.1 percent increase.

TABLE III.18—EFFECTS OF PROPOSED AUTOMATIC CYCLE TERMINATION TEST METHOD

Product class	Test unit	Current Appendix D1 CEF (*lbs/kWh*)	Proposed automatic cycle termination test method	
			CEF (*lbs/kWh*)	% Change from appendix D1 CEF
Vented Electric Standard	*1	3.58	3.94	10.2
	2	3.93	3.41	−13.2

TABLE III.18—EFFECTS OF PROPOSED AUTOMATIC CYCLE TERMINATION TEST METHOD—Continued

Product class	Test unit	Current Appendix D1 CEF (*lbs/kWh*)	Proposed automatic cycle termination test method	
			CEF (*lbs/kWh*)	% Change from appendix D1 CEF
	*3	3.83	4.35	13.6
	*4	3.71	4.34	16.9
	5	3.90	4.37	12.0
	*6	3.80	3.39	−10.9
	*7	3.84	3.83	−0.2
	*8	3.71	3.87	4.4
Vented Electric Compact (240V)	*9	3.53	4.12	16.7
	10	3.56	2.84	−20.2
Vented Electric Compact (120V)	*11	3.75	2.72	−27.4
Vented Gas	12	3.43	3.37	−1.7
	*13	3.31	3.58	8.1
	*14	3.49	3.84	9.8
	15	3.39	3.37	−0.7
	16	3.37	4.05	20.4
	17	3.37	3.66	8.6
Ventless Electric Compact (240V)	18	2.98	3.40	14.0
Ventless Electric Combo Washer/Dryer	19	2.81	2.70	−3.9
	20	2.28	2.74	20.2
Total Average				3.8

*Minimally compliant test units.

Based on these results and consistent with 42 U.S.C. 6293(e)(1) and (2), DOE tentatively concludes that the proposed amendments to the active mode test procedure will on average not impact the measured efficiency as compared to the current test procedure for models currently available on the market. As a result, DOE is not considering amendments to the energy conservation standards that will be required on January 1, 2015.

2. Standby Mode and Off Mode

DOE also investigated how the proposed amendments for standby mode and off mode would affect the measured efficiency. Because the proposed amendments to the DOE clothes dryer test procedure in 10 CFR part 430 subpart B, appendix D1 for measuring standby mode and off mode energy consumption would not alter the existing measure of energy consumption for clothes dryers (EF), the proposed amendments would not affect a manufacturer's ability to comply with the current energy conservation standards.

DOE's amendments in the January 2011 TP Final Rule specified that manufacturers will not be required to use the test procedure provisions for standby mode and off mode until the mandatory January 1, 2015 compliance date of the amended clothes dryer energy conservation standards. (10 CFR 430.32(h)(3)) The January 1, 2015 amended energy conservation standards are based on CEF, which accounts for standby mode and off mode energy consumption. Because today's proposed amendments would revise the provisions used to measure standby mode and off mode energy consumption, and thus CEF, DOE investigated how the proposed test procedure amendments would affect the amended energy conservation standards at 10 CFR 430.32(h)(3). DOE believes the proposed changes to the testing methods for measuring standby mode and off mode energy consumption do not vary significantly from the methods in the amended DOE clothes dryer test procedure in appendix D1 for measuring standby power and would not alter the measured efficiency. To confirm this assertion, DOE conducted testing on four clothes dryers (three of which minimally comply with the existing energy conservation standards) according to both the existing appendix D1 and the proposed amendments to appendix D1 for standby mode and off mode that are based IEC Standard 62301 (Second Edition). The results, presented below in Table III.19, show that the measured average standby power is the same using both methods.

TABLE III.19—DOE TEST RESULTS TO EVALUATE EFFECTS OF PROPOSED CHANGES TO STANDBY AND OFF MODE TESTING PROCEDURES

Test unit	Average standby power (*W*)	
	Existing appendix D1	Proposed appendix D1
1*	0.97	0.97
3*	0.16	0.16
14*	0.38	0.38
16	0.70	0.70

*Minimally compliant test units.

Based on these test results, DOE believes that the proposed amendments to the clothes dryer test procedure for standby mode and off mode would not alter the measured CEF. DOE is, therefore, not considering amendments to the energy conservation standards at 10 CFR 430.32(h)(3) that must be met on January 1, 2015.

DOE's proposed amendments would continue to clarify that manufacturers would not be required to use the provisions relating to standby mode and off mode energy use to determine compliance with the energy conservation standard until the compliance date of the amended energy conservation standards for clothes dryers addressing standby mode and off mode energy use on January 1, 2015. As a result, the proposed test procedure amendments for standby mode and off mode would not affect a manufacturer's ability to demonstrate compliance with the current energy conservation standards.

G. Compliance With Other EPCA Requirements

1. Test Burden

EPCA requires that test procedures 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 or period of use. Test procedures must also not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3))

DOE notes that the proposed amendments for automatic cycle termination, discussed in section III.B.5, would change the test cycle for automatic cycle termination dryers to require that a programmed automatic termination cycle be used for the test instead of using the maximum timed dry setting. The proposed provision to include the cool down period and allowing the clothes dryer to run until the completion of the programmed dry cycle would likely be less burdensome than the existing test procedure in which the tester is required to monitor or make estimates about the RMC of the test load and potentially run multiple test cycles to determine when to stop the test to achieve the desired final RMC. For timer dryers, the proposed amendments would use the same basic test method that is currently specified in the DOE test procedure in 10 CFR part 430, subpart B, appendix D1, except that the test cycle would be stopped when the final RMC is between 1.0 percent and 2.5 percent instead of between 2.5 percent and 5.0 percent. DOE notes that this would result in a slightly longer cycle time, but the additional time would be minimal compared to the overall time to set up and conduct the test. For these reasons, DOE believes that the amendments to more accurately account for automatic cycle termination proposed in today's NOPR would not be unduly burdensome to conduct. DOE also notes that the revised test cycle for automatic cycle termination dryers would produce a measured energy use that is more representative of consumer use because it directly measures the energy consumption of the programmed automatic termination cycle.

With regards to the amendments for standby and off mode power consumption, DOE concluded in the January 2011 TP Final Rule that the amended test procedure would produce test results that measure the standby mode and off mode power consumption of covered products during a representative average use cycle as well as annual energy consumption, and that the test procedure would not be unduly burdensome to conduct. 76 FR 972. 1020 (Jan. 6, 2011). Today's proposed amendments to the DOE clothes dryer test procedure for standby mode and off mode are based on an updated version of IEC Standard 62301, IEC Standard 62301 (Second Edition), which has been the subject of significant review and input from interested parties and, thus, continues to be an internationally accepted test standard for measuring standby mode and off mode power consumption. As discussed in section III.0 of this notice, DOE believes that the provisions of IEC Standard 62301 (Second Edition) that it proposes to incorporate by reference through today's NOPR provide a means to measure power consumption with greater accuracy and repeatability than the provisions from IEC Standard 62301 (First Edition) that were adopted in the January 2011 TP Final Rule. DOE tentatively concludes that today's proposed amendments would also provide measurements representative of average consumer use of the product under test. DOE also notes that interested parties have commented that the testing methods in IEC Standard 62301 (Second Edition) would not be unduly burdensome to conduct. 77 FR 28805, 28812 (May 16, 2012); 76 FR 58346, 58350 (Sept. 20, 2011); 77 FR 13888, 13893 (March 7, 2012). The potential for increased test burden for certain power consumption measurements is also offset by more reasonable requirements for testing equipment, while maintaining measurement accuracy deemed acceptable and practical by voting members for IEC Standard 62301 (Second Edition). For these reasons, DOE tentatively concludes that the amended test procedures proposed in today's NOPR would produce test results that measure the standby mode and off mode power consumption during representative use, and that the test procedures would not be unduly burdensome to conduct.

2. Certification Requirements

42 U.S.C. 6299 *et seq.* authorizes DOE to enforce compliance with the energy and water conservation standards established for certain consumer products. On March 7, 2011, the Department revised, consolidated, and streamlined its existing certification, compliance, and enforcement regulations for certain consumer products and commercial and industrial equipment covered under EPCA, including clothes dryers. 76 FR 12422. These regulations are codified in 10 CFR 429.21 (residential clothes dryers).

The certification requirements for residential clothes dryers consist of a sampling plan for selection of units for testing and requirements for certification reports. Because DOE introduced a new metric (CEF) in the January 2011 TP Final Rule, DOE proposes to amend the provisions in 10 CFR 429.21(a)(2) to include CEF, along with the existing measure of EF, in the list of metrics for which consumers would favor higher values. DOE is proposing to amend the reporting requirements in 10 CFR 429.21(b)(2) to require manufacturers, when using either appendix D or D1, to provide an indication if the clothes dryer has automatic termination controls and also to report the hourly Btu rating of the burner for gas clothes dryers. DOE is also proposing to amend 10 CFR 429.21(b)(2) to require manufacturers, when using appendix D1, to include the CEF and to list the cycle setting selections for the energy test cycle as recorded in the proposed section 3.4.7 of appendix D1 for each basic model.

3. Compliance Date of Any Final Amended Test Procedures

As stated in section I, DOE test procedures for clothes dryers are set forth in appendices D and D1 in 10 CFR part 430 subpart B. This proposal describes amendments to both appendices. Pursuant to 42 U.S.C. 6293(c)(2), effective 180 days after DOE prescribes or establishes a new or amended test procedure, manufacturers must make representations of energy efficiency using that new or amended test procedure. Therefore, effective 180

days after the promulgation of any final amendments to the test procedure based on this proposal, manufacturers must make representations of energy efficiency, including certifications of compliance, using either appendix D or appendix D1. Manufacturers must use a single appendix for all representations, including certifications of compliance, and may not use appendix D for certain representations and appendix D1 for other representations. See DOE's existing guidance on this topic for additional information, available at: *http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/tp_faq_2012-06-29.pdf*. Compliance with DOE's amended standards for clothes dryers, and corresponding use of the test procedures at Appendix D1 for all representations, including certifications of compliance, is required as of January 1, 2015. (76 FR 52852 (Aug. 24, 2011), 76 FR 52854 (Aug. 24, 2011))

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Order 12866

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

B. Review Under the Regulatory Flexibility Act

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

In conducting this review, DOE first determined the potential number of affected small entities. The Small Business Administration (SBA) considers an entity to be a small business if, together with its affiliates, it employs fewer than the threshold number of workers specified in 13 CFR part 121 according to the North American Industry Classification System (NAICS) codes. The SBA's Table of Size Standards is available at: *http://www.sba.gov/idc/groups/public/documents/sba_homepage/serv_sstd_tablepdf.pdf*. The threshold number for NAICS classification 335224, *Household Laundry Equipment Manufacturing,* which includes clothes dryer manufacturers, is 1,000 employees.

As discussed in the January 2011 TP Final Rule, DOE noted that most of the manufacturers supplying clothes dryers are large multinational corporations. As part of the most recent energy conservation standards rulemaking for residential clothes dryers, DOE requested comment on whether there are any manufacturer subgroups, including potential small businesses, that it should consider for its analyses. DOE did not receive any comments regarding whether there are any residential clothes dryer manufacturers that would be considered small businesses. DOE then conducted a more focused inquiry of the companies that could be small business manufacturers of products covered by this rulemaking. During its market survey, DOE used all available public information to identify potential small manufacturers. DOE's research included the AHAM membership directory, product databases (the AHRI, AHAM, CEC, and ENERGY STAR databases), individual company Web sites, and the SBA dynamic small business search [11] to find potential small business manufacturers. DOE also asked interested parties and industry representatives if they were aware of any other small business manufacturers during manufacturer interviews conducted and at DOE public meetings for the energy conservation standards rulemakings. DOE also contacted various companies, as necessary, to determine whether they met the SBA's definition of a small business manufacturer of covered residential clothes dryers. DOE screened out companies that did not offer products covered by this rulemaking, did not meet the definition of a ''small business,'' or are foreign owned and operated.

DOE initially identified at least 14 manufacturers of residential clothes dryers that sold products in the United States. DOE determined that 13 of these companies exceeded the SBA's maximum number of employees or were foreign-owned and operated. Thus, DOE identified only one potential small business manufacturer of residential clothes dryers. DOE could not locate this manufacturer on the dynamic small business search on the SBA Web site, but DOE nonetheless considered the economic impacts of the proposed test procedure amendments on this potential small business manufacturer.

As discussed in section III.G.0, DOE does not believe the proposed active mode test procedure amendments in today's NOPR to more accurately measure the effects of automatic cycle termination would result in any added test burden on manufacturers as compared to the current DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1. DOE is not proposing to require any additional test instruments or significantly different active mode testing methods and conditions that would require additional time for testing. For standby mode and off mode, DOE believes that the proposed test procedure amendments presented in section 0 would not represent a significant economic impact. DOE notes that industry-standard instruments, such as the Yokogawa WT210/WT230 digital power meter, that meet the standby mode and off mode requirements of the current DOE clothes dryer test procedure in 10 CFR part 430, subpart B, appendix D1, also meet the requirements of the proposed amendments for standby mode and off mode in today's NOPR. DOE also notes that the duration of a standby mode or off mode test period using the current test procedure in appendix D1 is 40 to 50 minutes. As discussed in section 0, DOE recognizes that the test duration using the proposed standby and off mode test procedure may range from 15 minutes to 3 hours depending on the stability of the measured power consumption. However, based on DOE's testing of four clothes dryers from different manufacturers, DOE expects the test duration using the proposed standby and off mode test procedure to be approximately 30 to 45 minutes for most clothes dryers. In addition, DOE notes that most third party testing laboratories already use these or similar industry-standard power meters for clothes dryer testing. As a result, if the

[11] A searchable database of certified small businesses is available online at: *http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm*.

small manufacturer decides to use a third party testing laboratory, DOE believes there would be a minimal, if any, increase in cost for standby mode and off mode testing.

For these reasons, DOE certifies that the proposed rule, if adopted, would not have a significant economic impact on a substantial number of small entities. Accordingly, DOE has not prepared a regulatory flexibility analysis for this rulemaking. DOE seeks comment on the certification set forth above, and will transmit the certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the SBA for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of clothes dryers 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 clothes dryers, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including clothes dryers. (76 FR 12422 (March 7, 2011). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act (PRA). This requirement has been approved by OMB under OMB control number 1910–1400. Public reporting burden for the certification is estimated to average 20 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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

D. Review Under the National Environmental Policy Act of 1969

In this proposed rule, DOE is adopting test procedure amendments that it expects will be used to develop and implement future energy conservation standards for clothes dryers. 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 proposed rule would amend the existing test procedures without affecting the amount, quality or distribution of energy usage, and, therefore, would not result in any environmental impacts. Thus, this rulemaking is covered by Categorical Exclusion A5 under 10 CFR part 1021, subpart D, which applies to any rulemaking that interprets or amends an existing rule without changing the environmental effect of that rule. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, ''Federalism,'' 64 FR 43255 (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.DOE has examined this proposed rule and has determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of today's proposed rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104–4, sec. 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed ''significant intergovernmental mandate,'' and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under

UMRA. 62 FR 12820; also available at *http://energy.gov/gc/office-general-counsel*. DOE examined today's proposed rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of $100 million or more in any year, so these requirements do not apply.

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

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

I. Review Under Executive Order 12630

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

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

K. Review Under Executive Order 13211

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

Today's action to amend the test procedure for measuring the energy efficiency of clothes dryers 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 DOE Organization Act (Pub. L. 95–91), DOE must comply with section 32 of the Federal Energy Administration Act of 1974 (Pub. L. 93–275), as amended by the Federal Energy Administration Authorization Act of 1977 (FEAA; Pub. L. 95–70) (15 U.S.C. 788). Section 32 essentially provides that, where a rule authorizes or requires use of commercial standards, the rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (FTC) concerning the impact of the commercial or industry standards on competition.

The proposed rule incorporates testing methods contained in the commercial standard, IEC Standard 62301, ''Household electrical appliances—Measurement of standby power,'' Edition 2.0, 2011–01. DOE has evaluated this standard and is unable to conclude whether it fully complies with the requirements of section 32(b) of the FEAA, *i.e.,* whether it was developed in a manner that fully provides for public participation, comment, and review. DOE will consult with the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in this standard and will address any concerns when it publishes a response to the public comments on this NOPR.

V. Public Participation

A. Attendance at Public Meeting

The time, date and location of the public meeting are listed in the **DATES** and **ADDRESSES** sections at the beginning of this document. If you plan to attend the public meeting, please notify Ms. Brenda Edwards at (202) 586–2945 or *Brenda.Edwards@ee.doe.gov.* Please note that foreign nationals visiting DOE Headquarters are subject to advance security screening procedures. Any foreign national wishing to participate in the meeting should advise DOE as soon as possible by contacting Ms. Edwards to initiate the necessary procedures. Please also note that those wishing to bring laptops into the Forrestal Building will be required to obtain a property pass. Visitors should avoid bringing laptops, or allow an extra 45 minutes. Persons can attend the public meeting via webinar.

In addition, you can attend the public meeting via webinar. Webinar registration information, participant instructions, and information about the capabilities available to webinar participants will be published on DOE's Web site *https://www1.gotomeeting.com/register/903943753*. Participants are responsible for ensuring their systems are compatible with the webinar software.

B. Procedure for Submitting Prepared General Statements for Distribution

Any person who has plans to present a prepared general statement may request that copies of his or her statement be made available at the public meeting. Such persons may submit requests, along with an advance electronic copy of their statement in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format, to the appropriate address shown in the **ADDRESSES** section at the beginning of this notice. The request and advance copy of statements must be received at least one week before the public meeting and may be emailed, hand-delivered, or sent by mail. DOE prefers to receive requests and advance copies via email. Please include a telephone number to enable DOE staff to make a follow-up contact, if needed.

C. Conduct of Public Meeting

DOE will designate a DOE official to preside at the public meeting and may also use a professional facilitator to aid discussion. The meeting will not be a

judicial or evidentiary-type public hearing, but DOE will conduct it in accordance with section 336 of EPCA (42 U.S.C. 6306). A court reporter will be present to record the proceedings and prepare a transcript. DOE reserves the right to schedule the order of presentations and to establish the procedures governing the conduct of the public meeting. After the public meeting, interested parties may submit further comments on the proceedings as well as on any aspect of the rulemaking until the end of the comment period.

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

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

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

D. Submission of Comments

DOE will accept comments, data, and information regarding this proposed rule before or after the public meeting, but no later than the date provided in the **DATES** section at the beginning of this proposed rule. Interested parties may submit comments using any of the methods described in the **ADDRESSES** section at the beginning of this notice.

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

However, your contact information will be publicly viewable if you include it in the comment or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment.

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

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

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

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery, please provide all items on a CD, if feasible. It is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

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

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

Confidential Business Information. According to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked confidential including all the information believed to be confidential, and one copy of the document marked non-confidential with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) A description of the items; (2) whether and why such items are customarily treated as confidential within the industry; (3) whether the information is generally known by or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its confidentiality; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its confidential character due to the passage of time; and (7) why disclosure of the information would be contrary to the public interest.

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

E. Issues on Which DOE Seeks Comment

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

1. Test Load

DOE seeks comment on the proposal to continue using the DOE test load to maintain repeatability and reproducibility. DOE welcomes additional data on the test-to-test repeatability and lab-to-lab reproducibility of both the DOE and IEC/AHAM test load. (*See* section III.B.5)

2. Automatic Cycle Termination Test Cycle

DOE seeks comment on the proposed amendments to more accurately measure the effects of automatic cycle termination. DOE specifically requests comment on the proposed maximum allowable final RMC of 2 percent using the DOE test load. DOE further seeks comment on the proposed test cycle program settings, temperature settings, and dryness level settings. DOE also requests comment and additional test data on the proposed field use factor of 0.80 for automatic cycle termination clothes dryers. (*See* section III.B.5)

3. Timed Dry Test Cycle

DOE seeks comment on the proposed test method for timer dryers. In particular, DOE welcomes comment on the proposed final RMC range of 1.0 percent to 2.5 percent with the normalization of the per-cycle energy consumption to represent the energy consumption required to dry the test load to 4-percent RMC changed to represent the new target RMC of 2 percent. DOE also seeks comment on the continued use of the 1.18 field use factor in the per-cycle energy consumption calculation for timer dryers. DOE welcomes comment on the determination to not measure the cool-down period for the timed dry test cycle due to the associated test burden and difficulties with determining the appropriated timed dry cycle time. DOE also welcomes comment on the proposed amendment to clarify that the clothes dryer should not be stopped intermittently in the middle of the timed dry test cycle for any reason. (*See* section III.B.5)

4. Characteristics of Water for Wetting Test Load

DOE welcomes comment on the determination to not propose amendments to include requirements for the characteristics of the water supply used for wetting the test load prior to the test cycle. DOE welcomes additional data evaluating the repeatability and reproducibility of test results using both appendix D1 water and water modified according to the requirements in IEC Standard 61121. (*See* section III.B.4)

5. Incorporation by Reference of IEC Standard 62301 (Second Edition)

DOE invites comment on the adequacy of IEC Standard 62301 (Second Edition) to measure standby mode and off mode power consumption for clothes dryers, and the suitability of incorporating into DOE regulations the following specific provisions from IEC Standard 62301 (Second Edition): section 4 (''General conditions for measurements''), paragraph 4.2, ''Test room,'' paragraph 4.3.2, ''Supply voltage waveform,'' and paragraph 4.4, ''Power measuring instruments,'' and section 5 (''Measurements''), paragraph 5.1, ''General,'' paragraph 5.2 ''Preparation of product'', and paragraph 5.3.2, ''Sampling method.'' DOE also invites comment on the acceptability of measuring the total harmonic content, crest factor, and maximum current ratio before and after the actual test measurement if the power measuring instrument is unable to perform these measurements during the actual test measurement. (*See* section 0)

6. Technical Correction to the Calculation of the Per-cycle Combined Total Energy Consumption

DOE seeks comment on the proposed amendments to correct the section number reference for the per-cycle standby mode and off mode energy consumption contained in the calculation of the per-cycle combined total energy consumption contains in 10 CFR part 430, subpart B, appendix D1, section 4.6. (*See* section III.D)

7. Clarifications to Test Conditions

DOE seeks comment on the proposed amendments to clarify the cycle settings used for the test cycle. DOE also seeks comment on the proposed amendments to clarify for gas clothes dryer the requirements for the hourly British thermal unit (Btu) rating of the burner and the regulator outlet pressure for clothes dryers equipped with a gas appliance pressure regulator. (*See* section III.E)

8. Effects of Proposed Amendments for Automatic Cycle Termination on Energy Conservation Standards

DOE welcomes comments and additional data on the effects of the proposed test procedure amendments on the current energy conservation standards in both 10 CFR 430.32(h)(2) and (3). In particular, DOE seeks comment on the proposed determination to not amend the energy conservation standards based on the proposed test procedure amendments for automatic cycle termination due to the anti-backsliding provisions in 42 U.S.C. 6295(o)(1). DOE also welcomes comment on the determination and testing results showing that the proposed standby mode and off mode test procedure amendments would not measurably affect the measured efficiency as compared to the existing DOE test procedure in 10 CFR 430, subpart B, appendix D1. (*See* section III.F)

9. Test Burden

DOE seeks comment on any added test burden associated with the proposed amendments. When providing comments regarding testing burden, DOE request that commenters provide specific details and quantify any burdens. (*See* section III.G.0)

VI. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 429

Energy conservation, Household appliances, Reporting and recordkeeping requirements.

10 CFR Part 430

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

Issued in Washington, DC, on December 14, 2012.

Kathleen B. Hogan,

Deputy Assistant Secretary, Energy Efficiency and Renewable Energy.

For the reasons stated in the preamble, DOE is proposing to amend parts 429 and 430 of title 10 of the 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.

■ 2. Section 429.21 is amended by:

■ a. Revising paragraph (a)(2)(ii) introductory text; and

■ b. Revising paragraph (b)(2).

The revision and addition read as follows:

§ 429.21 Residential clothes dryers.

* * * * *

(a) * * *

(2) * * *

(ii) Any represented value of the energy factor, combined energy factor, or other measure of energy consumption of a basic model for which consumers would favor higher values shall be less than or equal to the lower of:

* * * * *

(b) * * *

(2) Pursuant to § 429.12(b)(13), a certification report shall include the following public product-specific information: When using appendix D, the energy factor in pounds per kilowatt hours (lb/kWh), the capacity in cubic feet (cu ft), the voltage in volts (V) (for electric dryers only), an indication if the dryer has automatic termination controls, and the hourly British thermal unit (Btu) rating of the burner (for gas dryers only); when using appendix D1, the combined energy factor in pounds per kilowatt hours (lb/kWh), the capacity in cubic feet (cu ft), the voltage in volts (V) (for electric dryers only), an indication if the dryer has automatic termination controls, the hourly Btu rating of the burner (for gas dryers only), and a list of the cycle setting selections for the energy test cycle as recorded in section 3.4.7 of appendix D1 for each basic model.

PART 430—ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

■ 3. 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].

■ 4. Section 430.3 is amended by:

■ a. Removing ''appendix D1,'' from paragraph (m)(1); and

■ b. Adding ''appendix D1,'' after ''appendix C1,'' in (m)(2).

■ 5. Appendix D to Subpart B of Part 430 is amended:

■ a. Revise the introductory text;

■ b. In section 2. *Test Conditions,* by revising sections 2.3.2.1 and 2.3.2.2; and

■ c. In section 3. *Test Methods and Measurements,* by revising section 3.3.

The revisions read as follows:

Appendix D to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers

Note: Effective 180 days after the promulgation of any final amendments to the test procedure, manufacturers must make representations of energy efficiency, including certifications of compliance, using either appendix D or appendix D1. Manufacturers must use a single appendix for all representations, including certifications of compliance, and may not use appendix D for certain representations and appendix D1 for other representations. Compliance with DOE's amended standards for clothes dryers, and corresponding use of the test procedures at Appendix D1 for all representations, including certifications of compliance, is required as of January 1, 2015.

* * * * *

2. *Testing Conditions*

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2.3.2 *Gas supply.*

2.3.2.1 *Natural gas.* Maintain the gas supply to the clothes dryer at a normal inlet test pressure immediately ahead of all controls at 7 to 10 inches of water column. If the clothes dryer is equipped with a gas appliance pressure regulator, the regulator outlet pressure at the normal test pressure shall be within ±10 percent of the value specified by the manufacturer. The hourly Btu rating of the burner shall be maintained within ±5 percent of the rating specified by the manufacturer. If the requirement to maintain the hourly Btu rating of the burner within ±5 percent of the rating specified by the manufacturer cannot be achieved under the allowable range in gas inlet test pressure, the orifice of the gas burner should be modified as necessary to achieve the required Btu rating. The natural gas supplied should have a heating value of approximately 1,025 Btus per standard cubic foot. The actual heating value, H_n2, in Btus per standard cubic foot, for the natural gas to be used in the test shall be obtained either from measurements made by the manufacturer conducting the test using a standard continuous flow calorimeter as described in section 2.4.6 or by the purchase of bottled natural gas whose Btu rating is certified to be at least as accurate a rating as could be obtained from measurements with a standard continuous flow calorimeter as described in section 2.4.6.

2.3.2.2 *Propane gas.* Maintain the gas supply to the clothes dryer at a normal inlet test pressure immediately ahead of all controls at 11 to 13 inches of water column. If the clothes dryer is equipped with a gas appliance pressure regulator, the regulator outlet pressure at the normal test pressure shall be within ±10 percent of the value specified by the manufacturer. The hourly Btu rating of the burner shall be maintained within ±5 percent of the rating specified by the manufacturer. If the requirement to maintain the hourly Btu rating of the burner within ±5 percent of the rating specified by the manufacturer cannot be achieved under the allowable range in gas inlet test pressure, the orifice of the gas burner should be modified as necessary to achieve the required Btu rating. The propane gas supplied should have a heating value of approximately 2,500 Btus per standard cubic foot. The actual heating value, H_p, in Btus per standard cubic foot, for the propane gas to be used in the test shall be obtained either from measurements made by the manufacturer conducting the test using a standard continuous flow calorimeter as described in section 2.4.6 or by the purchase of bottled gas whose Btu rating is certified to be at least as accurate a rating as could be obtained from measurement with a standard continuous calorimeter as described in section 2.4.6.

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3. *Test Procedures and Measurements*

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3.3 *Test cycle.* Operate the clothes dryer at the maximum temperature setting and, if equipped with a timer, at the maximum time setting. Any other optional cycle settings that do not affect the temperature and time settings shall be tested in the as-shipped position. If the clothes dryer does not have a separate temperature setting selection on the control panel, the maximum time setting should be used for the drying test cycle. Dry the test load until the moisture content of the test load is between 2.5 percent and 5.0 percent of the bone-dry weight of the test load, but do not permit the dryer to advance into cool down. If required, reset the timer or automatic dry control.

* * * * *

■ 6. Appendix D1 to Subpart B of Part 430 is amended:

■ a. By revising the introductory text;

■ b. In section 1. *Definitions,* by:

■ 1. Redesignating sections 1.5 through 1.18 and 1.19 as sections 1.6 through 1.19 and 1.21, respectively;

■ 2. Revising newly designated section 1.12;

■ 3. Adding sections 1.5 and 1.20;

c. In section 2. *Test Conditions,* by:

1. Revising sections 2.1, 2.3.1.1, 2.3.2.1, 2.3.2.2, 2.4.7, 2.6.3, 2.7.1, and 2.7.2; 2. Adding sections 2.1.1 through 2.1.3;

d. In section 3. *Test Methods and Measurements,* by:

1. Revising sections 3.3, 3.6, 3.6.1, and 3.6.2;

2. Adding sections 3.3.1, 3.3.2, and 3.4.7; and

e. In section 4. *Calculation of Derived Results From Test Measurements,* by revising sections 4.1, 4.2, 4.3, and 4.6.

The additions and revisions read as follows:

Appendix D1 to Subpart B of Part 430—Uniform Test Method for Measuring the Energy Consumption of Clothes Dryers

Note: Effective 180 days after the promulgation of any final amendments to the test procedure, manufacturers must make representations of energy efficiency, including certifications of compliance, using either appendix D or appendix D1. Manufacturers must use a single appendix for

all representations, including certifications of compliance, and may not use appendix D for certain representations and appendix D1 for other representations. Compliance with DOE's amended standards for clothes dryers, and corresponding use of the test procedures at Appendix D1 for all representations, including certifications of compliance, is required as of January 1, 2015.

1. Definitions

* * * * *

1.5 ''Automatic termination control dryer'' means a clothes dryer which can be preset to carry out at least one sequence of operations to be terminated by means of a system assessing, directly or indirectly, the moisture content of the load. An automatic termination control dryer with supplementary timer or that may also be manually controlled shall be tested as an automatic termination control dryer.

* * * * *

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

* * * * *

1.20 ''Timer dryer'' means a clothes dryer that can be preset to carry out at least one operation to be terminated by a timer, but may also be manually controlled, and does not include any automatic termination function.

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2. Testing Conditions

2.1 *Installation.*

2.1.1 *All clothes dryers.* For both conventional clothes dryers and ventless clothes dryers, as defined in sections 1.8 and 1.21 of this appendix, install the clothes dryer in accordance with manufacturer's instructions. If the manufacturer's instructions do not specify the installation requirements for a certain component, it shall be tested in the as-shipped condition. Where the manufacturer gives the option to use the dryer both with and without a duct, the dryer shall be tested without the exhaust simulator described in section 3.3.5.1 of AHAM HLD–1 (incorporated by reference; see § 430.3). All external joints should be taped to avoid air leakage. For drying testing, disconnect all console lights or other lighting systems on the clothes dryer which do not consume more than 10 watts during the clothes dryer test cycle. For standby and off mode testing, the clothes dryer shall also be installed in accordance with section 5, paragraph 5.2 of IEC 62301 (incorporated by reference; see § 430.3), disregarding the provisions regarding batteries and the determination, classification, and testing of relevant modes. For standby and off mode testing, do not disconnect console lights or other lighting systems.

2.1.2 *Conventional clothes dryers.* For conventional clothes dryers, as defined in section 1.8 of this appendix, the dryer exhaust shall be restricted by adding the AHAM exhaust simulator described in section 3.3.5.1 of AHAM HLD–1 (incorporated by reference; see § 430.3).

2.1.3 *Ventless clothes dryers.* For ventless clothes dryers, as defined in section 1.21, the dryer shall be tested without the AHAM exhaust simulator. If the manufacturer gives the option to use a ventless clothes dryer, with or without a condensation box, the dryer shall be tested with the condensation box installed. For ventless clothes dryers, the condenser unit of the dryer must remain in place and not be taken out of the dryer for any reason between tests.

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2.3.1.1 *Supply voltage waveform.* For the clothes dryer standby mode and off mode testing, maintain the electrical supply voltage waveform indicated in section 4, paragraph 4.3.2 of IEC 62301 (incorporated by reference; see § 430.3). If the power measuring instrument used for testing is unable to measure and record the total harmonic content during the test measurement period, it is acceptable to measure and record the total harmonic content immediately before and after the test measurement period.

2.3.2 *Gas supply.*

2.3.2.1 *Natural gas.* Maintain the gas supply to the clothes dryer immediately ahead of all controls at a pressure of 7 to 10 inches of water column. If the clothes dryer is equipped with a gas appliance pressure regulator for which the manufacturer specifies an outlet pressure, the regulator outlet pressure shall be within ±10 percent of the value specified by the manufacturer. The hourly Btu rating of the burner shall be maintained within ±5 percent of the rating specified by the manufacturer. If the requirement to maintain the hourly Btu rating of the burner within ±5 percent of the rating specified by the manufacturer cannot be achieved under the allowable range in gas inlet test pressure, the orifice of the gas burner should be modified as necessary to achieve the required Btu rating. The natural gas supplied should have a heating value of approximately 1,025 Btus per standard cubic foot. The actual heating value, H_n2, in Btus per standard cubic foot, for the natural gas to be used in the test shall be obtained either from measurements made by the manufacturer conducting the test using a standard continuous flow calorimeter as described in section 2.4.6 or by the purchase of bottled natural gas whose Btu rating is certified to be at least as accurate a rating as could be obtained from measurements with a standard continuous flow calorimeter as described in section 2.4.6.

2.3.2.2 *Propane gas.* Maintain the gas supply to the clothes dryer immediately ahead of all controls at a pressure of 11 to 13 inches of water column. If the clothes dryer is equipped with a gas appliance pressure regulator for which the manufacturer specifies an outlet pressure, the regulator outlet pressure shall be within ±10 percent of the value specified by the manufacturer. The hourly Btu rating of the burner shall be maintained within ±5 percent of the rating specified by the manufacturer. If the requirement to maintain the hourly Btu rating of the burner within ±5 percent of the rating specified by the manufacturer cannot be achieved under the allowable range in gas inlet test pressure, the orifice of the gas burner should be modified as necessary to achieve the required Btu rating. The propane gas supplied should have a heating value of approximately 2,500 Btus per standard cubic foot. The actual heating value, H_p, in Btus per standard cubic foot, for the propane gas to be used in the test shall be obtained either from measurements made by the manufacturer conducting the test using a standard continuous flow calorimeter as described in section 2.4.6 or by the purchase of bottled gas whose Btu rating is certified to be at least as accurate a rating as could be obtained from measurement with a standard continuous calorimeter as described in section 2.4.6.

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2.4.7 *Standby mode and off mode watt meter.* The watt meter used to measure standby mode and off mode power consumption shall meet the requirements specified in section 4, paragraph 4.4 of IEC 62301(incorporated by reference; see § 430.3). 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, it is acceptable to measure the crest factor, power factor, and maximum current ratio immediately before and after the test measurement period.

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2.6.3 *Test Cloth Preconditioning.*

A new test cloth load and energy stuffer cloths shall be treated as follows:

(1) Bone dry the load to a weight change of ±1 percent, or less, as prescribed in section 1.6 of this appendix.

(2) Place the test cloth load in a standard clothes washer set at the maximum water fill level. Wash the load for 10 minutes in soft water (17 parts per million hardness or less), using 60.8 grams of AHAM standard test detergent Formula 3.Wash water temperature should be maintained at 140° ± 5 °F (60° ± 2.7 °C). Rinse water temperature is to be controlled at 100° ± 5 °F (37.7 ± 2.7 °C).

(3) Rinse the load again at the same water temperature.

(4) Bone dry the load as prescribed in section 1.6 of this appendix and weigh the load.

(5) This procedure is repeated until there is a weight change of 1 percent or less.

(6) A final cycle is to be a hot water wash with no detergent, followed by two warm water rinses.

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2.7.1 *Compact size dryer load.* Prepare a bone-dry test load of energy cloths that weighs 3.00 pounds ± .03 pounds. The test load can be adjusted to achieve proper weight by adding energy stuffer cloths, but no more than five stuffer cloths may be added per load. Dampen the load by agitating it in water whose temperature is 60 °F ± 5 °F and consists of 0 to 17 parts per million hardness for approximately 2 minutes to saturate the fabric. Then, extract water from the wet test load by spinning the load until the moisture content of the load is between 52.5 and 57.5 percent of the bone-dry weight of the test load. Make a final mass adjustment, such that the moisture content is 57.5 percent ± 0.33 percent by adding water uniformly to the load in a very fine spray.

2.7.2 *Standard size dryer load.* Prepare a bone-dry test load of energy cloths that

weighs 8.45 pounds ± .085 pounds. The test load can be adjusted to achieve proper weight by adding stuffer cloths, but no more than five stuffer cloths may be added per load. Dampen the load by agitating it in water whose temperature is 60 °F ± 5°F and consists of 0 to 17 parts per million hardness for approximately 2 minutes to saturate the fabric. Then, extract water from the wet test load by spinning the load until the moisture content of the load is between 52.5 and 57.5 percent of the bone-dry weight of the test load. Make a final mass adjustment, such that the moisture content is 57.5 percent ± 0.33 percent by adding water uniformly to the load in a very fine spray.

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3. Test Procedures and Measurements

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3.3 *Test cycle.*

3.3.1 *Timer dryers.* For timer dryers, as defined in section 1.20 of this appendix, operate the clothes dryer at the maximum temperature setting and, if equipped with a timer, at the maximum time setting. Any other optional cycle settings that do not affect the temperature and time settings shall be tested in the as-shipped position. If the clothes dryer does not have a separate temperature setting selection on the control panel, the maximum time setting should be used for the drying test cycle. Dry the load until the moisture content of the test load is between 1 and 2.5 percent of the bone-dry weight of the test load, at which point the test cycle is stopped, but do not permit the dryer to advance into cool down. If required, reset the timer to increase the length of the drying cycle. After stopping the test cycle, remove and weigh the test load. The clothes dryer shall not be stopped intermittently in the middle of the test cycle for any reason. Record the data specified by section 3.4 of this appendix. If the dryer automatically stops during a cycle because the condensation box is full of water, the test is stopped, and the test run is invalid, in which case the condensation box shall be emptied and the test re-run from the beginning. For ventless dryers, as defined in section 1.21 of this appendix, during the time between two cycles, the door of the dryer shall be closed except for loading (and unloading).

3.3.2 *Automatic termination control dryers.* For automatic termination control dryers, as defined in section 1.5 of this appendix, a ''normal'' program shall be selected for the test cycle. For dryers that do not have a ''normal'' program, the cycle recommended by the manufacturer for drying cotton or linen clothes shall be selected. Where the drying temperature setting can be chosen independently of the program, it shall be set to the maximum. Where the dryness level setting can be chosen independently of the program, it shall be set to the ''normal'' or ''medium'' dryness level setting. If such designation is not provided, then the dryness level shall be set at the mid-point between the minimum and maximum settings. Any other optional cycle settings that do not affect the program, temperature and dryness settings shall be tested in the as-shipped position. Operate the clothes dryer until the completion of the programmed cycle, including the cool down period. After the completion of the test cycle, remove and weigh the test load. Record the data specified in section 3.4 of this appendix. If the final moisture content is greater than 2 percent, the test shall be invalid and a new run shall be conducted using the highest dryness level setting. If the dryer automatically stops during a cycle because the condensation box is full of water, the test is stopped, and the test run is invalid, in which case the condensation box shall be emptied and the test re-run from the beginning. For ventless dryers, during the time between two cycles, the door of the dryer shall be closed except for loading (and unloading).

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3.4.7 The cycle settings selected, in accordance with section 3.3.2 of this appendix, for the automatic termination control dryer test.

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3.6 *Standby mode and off mode power.* Establish the testing conditions set forth in Section 2 ''Testing Conditions'' of this appendix. For clothes dryers that take some time to enter a stable state from a higher power state as discussed in Section 5, Paragraph 5.1, Note 1 of IEC 62301 (incorporated by reference; see § 430.3), allow sufficient time for the clothes dryer to reach the lower power state before proceeding with the test measurement. Follow the test procedure specified in section 5, paragraph 5.3.2 of IEC 62301 for testing in each possible mode as described in sections 3.6.1 and 3.6.2 of this appendix.

3.6.1 If a clothes dryer has an inactive mode, as defined in section 1.13 of this appendix, measure and record the average inactive mode power of the clothes dryer, P_{IA}, in watts.

3.6.2 If a clothes dryer has an off mode, as defined in section 1.16 of this appendix, measure and record the average off mode power of the clothes dryer, P_{OFF}, in watts.

4. Calculation of Derived Results From Test Measurements

4.1 *Total per-cycle electric dryer energy consumption.* Calculate the total electric dryer energy consumption per cycle, E_{ce}, expressed in kilowatt-hours per cycle and defined as:

$E_{ce} = E_t \times$ field use,

For automatic termination control dryers, and,

$E_{ce} = [55.5/(W_w - W_d)] \times E_t \times$ field use,

For timer dryers

Where

55.5 = an experimentally established value for the percent reduction in the moisture content of the test load during a laboratory test cycle expressed as a percent.

E_t = the energy recorded in section 3.4.5 of this appendix.

field use = field use factor

= 1.18, the field use factor for clothes dryers with time termination control systems only without any automatic termination control functions.

= 0.80, the field use factor for clothes dryers with automatic control systems that meet the requirements of the definition for automatic control systems in sections 1.5, 1.15 and 1.19 of this appendix, including those that also have a supplementary timer control, or that may also be manually controlled.

W_w = the moisture content of the wet test load as recorded in section 3.4.2 of this appendix.

W_d = the moisture content of the dry test load as recorded in section 3.4.3 of this appendix.

4.2 *Per-cycle gas dryer electrical energy consumption.* Calculate the gas dryer electrical energy consumption per cycle, E_{ge}, expressed in kilowatt-hours per cycle and defined as:

$E_{ge} = E_{te} \times$ field use,

For automatic termination control dryers, and,

$E_{ge} = [55.5/(W_w - W_d)] \times E_{te} \times$ field use,

for timer dryers

Where

E_{te} = the energy recorded in section 3.4.6.1 of this appendix.

field use, 55.5, W_w, W_d as defined in section 4.1 of this appendix

4.3 *Per-cycle gas dryer gas energy consumption.* Calculate the gas dryer gas energy consumption per cycle, E_{ge}. expressed in Btus per cycle and defined as:

$E_{gg} = E_{tg} \times$ field use $\times$ GEF

for automatic termination control dryers, and,

$E_{gg} = [55.5/(W_w - W_d)] \times E_{tg} \times$ field use $\times$ GEF

for time dryers

Where

E_{tg} = the energy recorded in section 3.4.6.2 of this appendix.

GEF = corrected gas heat value (Btu per cubic feet) as defined in section 3.4.6.3 of this appendix,

field use, 55.5, W_w, W_d as defined in section 4.1 of this appendix.

* * * * *

4.6 *Per-cycle combined total energy consumption expressed in kilowatt-hours.* Calculate the per-cycle combined total energy consumption, E_{CC}, expressed in kilowatt-hours per cycle and defined for an electric clothes dryer as:

$E_{CC} = E_{ce} + E_{TSO}$

Where:

E_{ce} = the energy recorded in section 4.1 of this appendix, and

E_{TSO} = the energy recorded in section 4.5 of this appendix,

and defined for a gas clothes dryer as:

$E_{CC} = E_{cg} + E_{TSO}$

Where:

E_{cg} = the energy recorded in section 4.4 of this appendix, and

E_{TSO} = the energy recorded in section 4.5 of this appendix.

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