



[6450-01-P]

**DEPARTMENT OF ENERGY**

**10 CFR Part 430**

**[EERE-2019-BT-TP-0003]**

**Energy Conservation Program: Test Procedure for Direct Heating Equipment**

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

**ACTION:** Request for information.

**SUMMARY:** The U.S. Department of Energy (“DOE”) is initiating a data collection process through this request for information (“RFI”) to consider whether to amend DOE’s test procedure for direct heating equipment. To inform interested parties and to facilitate this process, DOE has gathered data, identifying several issues associated with the currently applicable test procedures on which DOE is interested in receiving comment. The issues outlined in this document mainly concern the evaluation of additional calculations relevant to the unvented direct heating equipment test procedure, updates to applicable industry standards incorporated by reference in the vented direct heating equipment test procedure, and any additional topics that may inform DOE’s decisions in a future test procedure rulemaking, including methods to reduce regulatory burden while ensuring the procedure’s accuracy. DOE welcomes written comments from the public on any subject within the scope of this document (including topics not raised in this RFI).

**DATES:** Written comments and information are requested and will be accepted on or before **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at <http://www.regulations.gov>. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2019-BT-TP-0003, by any of the following methods:

1. *Federal eRulemaking Portal:* <http://www.regulations.gov>. Follow the instructions for submitting comments.
2. *E-mail:* to [DHE2019TP0003@ee.doe.gov](mailto:DHE2019TP0003@ee.doe.gov). Include docket number EERE-2019-BT-TP-0003 in the subject line of the message.
3. *Postal Mail:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, Test Procedure RFI for Direct Heating Equipment, Docket No. EERE-2019-BT-TP-0003, 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:* Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 950 L’Enfant Plaza, SW., Suite 600, Washington, DC, 20024. Telephone: (202) 287-1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimilies (faxes) will be accepted. For detailed instructions on submitting comments and additional information on this process, see section III of this document.

*Docket:* The docket for this activity, which includes *Federal Register* notices, comments, and other supporting documents/materials, is available for review at <http://www.regulations.gov>. All documents in the docket are listed in the <http://www.regulations.gov> index. However, some documents listed in the index, such as those containing information that is exempt from public disclosure, may not be publicly available.

The docket webpage can be found at [<http://www.regulations.gov/docket?D=EERE-2019-BT-STD-0002>]. The docket webpage contains instructions on how to access all documents, including public comments, in the docket. See section III of this document for information on how to submit comments through <http://www.regulations.gov>.

**FOR FURTHER INFORMATION CONTACT:** Dr. Stephanie Johnson, U.S. *Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office*, EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1943. E-mail: [ApplianceStandardsQuestions@ee.doe.gov](mailto:ApplianceStandardsQuestions@ee.doe.gov).

Mr. Eric Stas, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 586-5827. E-mail: [Eric.Stas@hq.doe.gov](mailto:Eric.Stas@hq.doe.gov).

For further information on how to submit a comment or review other public comments and the docket, contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by e-mail: *ApplianceStandardsQuestions@ee.doe.gov*.

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### **I. Introduction**

Direct heating equipment (DHE) is included in the list of “covered products” for which DOE is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6292(a)(9)) The definition of “direct heating equipment” includes vented home heating equipment and unvented home heating equipment. 10 Code of Federal Regulations (CFR) 430.2. (Hereafter in this notice, the terms “vented heater” and “unvented heater” are used to describe the two types of direct heating equipment). DOE’s test procedures for unvented

heaters are prescribed at 10 CFR part 430, subpart B, appendix G (“Appendix G”). DOE’s test procedures for vented heaters are prescribed at 10 CFR part 430, subpart B, appendix O (“Appendix O”). DOE prescribes energy conservation standards for vented heaters at 10 CFR 430.32(i). DOE does not currently prescribe energy conservation standards for unvented heaters. The following sections discuss DOE’s authority to establish and amend test procedures for DHE, as well as relevant background information regarding DOE’s consideration of test procedures for this product.

#### A. Authority and Background

The Energy Policy and Conservation Act of 1975 (“EPCA” or “the Act”),<sup>1</sup> Public Law 94-163 (42 U.S.C. 6291-6317, as codified), among other things, authorizes DOE to regulate the energy efficiency of a number of consumer products and industrial equipment. (42 U.S.C. 6291–6317, as codified) Title III, Part B<sup>2</sup> of EPCA established the Energy Conservation Program for Consumer Products Other Than Automobiles, which sets forth a variety of provisions designed to improve energy efficiency. These products include DHE, the subject of this RFI. (42 U.S.C. 6292(a)(9))

Under EPCA, DOE’s energy conservation program consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of the Act specifically include definitions (42

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<sup>1</sup> All references to EPCA in this document refer to the statute as amended through America’s Water Infrastructure Act of 2018, Public Law 115–270 (Oct. 23, 2018).

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

U.S.C. 6291), energy conservation standards (42 U.S.C. 6295), test procedures (42 U.S.C. 6293), labeling provisions (42 U.S.C. 6294), and the authority to require information and reports from manufacturers (42 U.S.C. 6296).

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

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

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

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

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including DHE, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, and estimated operating costs during a representative average use cycle or period of use. (42 U.S.C. 6293(b)(1)(A)) If the Secretary determines, on his own behalf or in response to a petition by any interested person, that a test procedure should be prescribed or amended, the Secretary shall promptly publish in the Federal Register proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedures. The comment period on a proposed rule to amend a

test procedure shall be at least 60 days and may not exceed 270 days. In prescribing or amending a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2)) If DOE determines that test procedure revisions are not appropriate, DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6293(b)(1)(A)(ii)) DOE is publishing this RFI to collect data and information to inform its decision in satisfaction of the 7-year review requirement specified in EPCA. (42 U.S.C. 6293(b)(1)(A))

## B. Rulemaking History

DOE's existing test procedures for unvented heaters and vented heaters appear at Appendix G and Appendix O, respectively. DOE originally established Appendix G in a final rule published in the *Federal Register* on May 10, 1978. 43 FR 20128, 20132-20146. DOE amended the test procedures for unvented home heating equipment on March 28, 1984 ("March 28, 1984 final rule") to prescribe test procedures for fossil-fuel-fired unvented heaters and to add a calculation of the estimated operational cost per million British thermal unit (Btu) of output. 49 FR 12148, 12157-12158. DOE most recently updated Appendix G in a final rule published December 17, 2012 ("December 17, 2012 final rule") to establish procedures for measuring energy consumption in standby mode and off mode, pursuant to EPCA. 77 FR 74559. 74571-74572. In the December 17, 2012 final rule, DOE did not incorporate standby mode and off mode energy into the annual energy consumption calculations for unvented heaters because it

determined that a detailed annual energy consumption accounting was not appropriate for unvented heaters, as described further in section II.C of this document. 77 FR 74559, 74561.

DOE originally established Appendix O in a final rule published in the Federal Register on May 10, 1978. 43 FR 20147, 20182-20205. DOE amended the test procedures for vented home heating equipment in the March 28, 1984 final rule to include a simplified procedure for heaters with modulating controls, and to address manually controlled vented heaters, vented heaters equipped with thermal stack dampers, and floor furnaces. 49 FR 12148, 12169-12178. DOE amended the test procedure for vented heaters again on May 12, 1997 to add calculations for electrical energy consumption, to clarify the pilot light energy measurement for manually-controlled vented heaters, and to update the provisions for determining the efficiency of manually-controlled heaters with variable input rates. 62 FR 26140, 26156-26157. In the December 17, 2012 final rule, DOE established procedures for measuring power consumption in standby mode and off mode and for calculating the energy consumption associated with operation in standby mode and off mode. 77 FR 74559, 74561.

In the most recent test procedure rulemaking for DHE, DOE added provisions for testing vented home heating equipment that utilize condensing technology and incorporated by reference six industry test standards to replace the outdated test standards referred to in the then existing DOE test procedure. 80 FR 792 (Jan. 6, 2015) (“January 6, 2015 Final Rule”). DOE determined at that time not to amend the test procedures for unvented heaters. Id. at 793.

For unvented electric heaters that are the primary heating source for the home, Appendix G includes provisions for measuring electric power and calculating annual energy consumption. For all electric and gas unvented heaters, Appendix G includes provisions for determining the

rated output. Appendix G does not contain provisions for determining energy efficiency, as all unvented heaters are generally considered to be 100-percent efficient. Accordingly, DOE has not established energy conservation standards for unvented heaters.

For vented heaters, Appendix O includes provisions for determining annual fuel utilization efficiency (“AFUE”), which is the efficiency metric used for determining compliance with the energy conservation standards. Appendix O also specifies provisions for determining annual energy consumption. Manufacturers must use the test procedures at Appendix O to demonstrate compliance with the current energy conservation standards for vented home heating equipment.

## **II. Request for Information**

In the following sections, DOE has identified a variety of issues on which it seeks input to aid in the development of the technical and economic analyses regarding whether amended test procedures for DHE may be warranted. Specifically, DOE is requesting comment on any opportunities to streamline and simplify testing requirements for DHE.

Additionally, DOE welcomes comments on other issues relevant to the conduct of this process that may not be specifically identified in this document. In particular, DOE notes that under Executive Order 13771, “Reducing Regulation and Controlling Regulatory Costs,” Executive Branch agencies such as DOE are directed to manage the costs associated with the imposition of expenditures required to comply with Federal regulations. See 82 FR 9339 (Feb. 3, 2017). Pursuant to that Executive Order, DOE encourages the public to provide input on

measures DOE could take to lower the cost of its regulations applicable to DHE consistent with the requirements of EPCA.

#### A. Scope and Definitions

The test procedures for DHE cover those products that meet the definitions of “direct heating equipment” and “home heating equipment,” as codified at 10 CFR 430.2 and defined as follows:

1. “Direct heating equipment” means vented home heating equipment and unvented home heating equipment.
2. “Home heating equipment, not including furnaces” means vented home heating equipment and unvented home heating equipment.

#### 1. Unvented Heaters

The unvented heaters test procedure covers those products that meet the definitions for “unvented home heating equipment,” as codified at 10 CFR 430.2. DOE defines unvented heaters and the various sub-types of unvented heaters as follows:

1. “Unvented home heating equipment” means a class of home heating equipment, not including furnaces, used for the purpose of furnishing heat to a space proximate to such heater directly from the heater and without duct connections and includes electric heaters and unvented gas and oil heaters.

2. “Electric heater” means an electric appliance in which heat is generated from electrical energy and dissipated by convection and radiation and includes baseboard electric heaters, ceiling electric heaters, floor electric heaters, portable electric heaters, and wall electric heaters.
3. “Primary heater” means a heating device that is the principal source of heat for a structure and includes baseboard electric heaters, ceiling electric heaters, and wall electric heaters.
4. “Supplementary heater” means a heating device that provides heat to a space in addition to that which is supplied by a primary heater. Supplementary heaters include portable electric heaters.
5. “Baseboard electric heater” means an electric heater which is intended to be recessed in or surface mounted on walls at floor level, which is characterized by long, low physical dimensions, and which transfers heat by natural convection and/or radiation.
6. “Ceiling electric heater” means an electric heater which is intended to be recessed in, surface mounted on, or hung from a ceiling, and which transfers heat by radiation and/or convection (either natural or forced).
7. “Floor electric heater” means an electric heater which is intended to be recessed in a floor, and which transfers by radiation and/or convection (either natural or forced).
8. “Portable electric heater” means an electric heater which is intended to stand unsupported, and can be moved from place to place within a structure. It is connected to

electric supply by means of a cord and plug, and transfers heat by radiation and/or convection (either natural or forced).

9. “Wall electric heater” means an electric heater (excluding baseboard electric heaters) which is intended to be recessed in or surface mounted on walls, which transfers heat by radiation and/or convection (either natural or forced) and which includes forced convectors, natural convectors, radiant heaters, high wall or valance heaters.
10. “Unvented gas heater” means an unvented, self-contained, free-standing, non-recessed gas-burning appliance which furnishes warm air by gravity or fan circulation.
11. “Unvented oil heater” means an unvented, self-contained, free-standing, non-recessed oil-burning appliance which furnishes warm air by gravity or fan circulation.

Issue A.1 DOE requests comment on the definitions currently applicable to unvented heaters and whether any of the definitions should be revised, and if so, how. Please provide a rationale for any suggested change. DOE notes that floor electric heaters are not currently listed among the other types of heaters included in the definition of a “primary heater.” DOE understands that floor electric heaters have similar heat output as the types of heaters listed in the definition of “primary heater” and may provide the primary source of heat in small dwellings. DOE requests comment on whether floor electric heaters should be specifically defined and also included in the definition of “primary heater.”

## 2. Vented Heaters

The vented heaters test procedure covers those products that meet the definitions for “vented home heating equipment,” as codified at 10 CFR 430.2. DOE defines vented heaters and the various sub-types of vented heaters as follows:

1. “Vented home heating equipment” or “vented heater” means a class of home heating equipment, not including furnaces, designed to furnish warmed air to the living space of a residence, directly from the device, without duct connections (except that boots not to exceed 10 inches beyond the casing may be permitted) and includes: vented wall furnace, vented floor furnace, and vented room heater.
2. “Vented floor furnace” means a self-contained vented heater suspended from the floor of the space being heated, taking air for combustion from outside this space. The vented floor furnace supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.
3. “Vented room heater” means a self-contained, free standing, non-recessed, vented heater for furnishing warmed air to the space in which it is installed. The vented room heater supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.
4. “Vented wall furnace” means a self-contained vented heater complete with grilles or the equivalent, designed for incorporation in, or permanent attachment to, a wall of a residence and furnishing heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.

Issue A.2 DOE requests comment on the definitions currently applicable to vented heaters and whether any of the definitions should be revised, and if so, how. Please provide a rationale for any suggested change.

#### B. Updates to Industry Standards

DOE's current test procedures for DHE reference industry standards for various aspects of the test procedures. All materials incorporated by reference are listed at 10 CFR 430.3 and within Appendices G and O. DOE intends to fully review all the referenced standards in the DHE test procedures as part of this evaluation. The following is a list of the shorthand titles and full titles of all the referenced industry standards currently used in the DHE test procedures.

- “ANSI/ASHRAE 103–2007” means the test standard published by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers titled, “Method of Test for Annual Fuel Utilization Efficiency of Residential Central Furnaces and Boilers.”
- “ANSI Z21.86–2008” means the standard published by the American National Standards Institute titled, “Vented Gas-Fired Space Heating Appliances.”
- “ASTM D2156–09” means the standard published by the American Society of Testing and Materials International titled, “Standard Test Method for Smoke Density in Flue Gases from Burning Distillate Fuels.”
- “IEC 62301 (Second Edition)” means the standard published by the International Electrotechnical Commission titled, “Household electrical appliances—Measurement of standby power” (Edition 2.0 2011-01).

- “UL 729–2003” means the test standard published by Underwriters Laboratories, Inc. titled, “Standard for Safety for Oil-Fired Floor Furnaces.”
- “UL 730–2003” means the test standard published by Underwriters Laboratories, Inc. titled, “Standard for Safety for Oil-Fired Wall Furnaces.”
- “UL 896–1993” means the test standard published by Underwriters Laboratories, Inc. titled, “Standard for Safety for Oil-Burning Stoves.”

DOE conducted a preliminary examination of the available industry test standards and found that updates exist for all the incorporated standards except for ASTM D2156–09 and IEC 62301 (Second Edition). DOE reviewed all of those updated industry test standards.

However, when reviewing the revised versions of UL 729-2003 (last revised November 22, 2016), 730-2003 (last revised November 22, 2016), and 896 -1993 (last revised November 22, 2016), DOE found that no revisions have been made to the sections incorporated by reference to the vented heaters test procedure.

Issue B.1 DOE requests any information in relation to the revisions to the existing standards that have been incorporated by reference, including the purpose of the updates and whether any of the updates would be expected to impact the test burden or measured energy consumption under the DOE test procedures for vented and unvented heaters.

## 1. ANSI/ASHRAE 103

DOE is aware that ANSI/ASHRAE 103–2007 has been superseded by ANSI/ASHRAE 103–2017. DOE examined both versions of the ANSI/ASHRAE 103 standard and found several changes to sections incorporated by reference within the vented heater test procedure. DOE understands many of the changes to be minor clarifications, such as adding metric units or changing the order of a sentence without affecting its intent. However, other changes could have a noticeable effect on the vented heater test procedure, if adopted by DOE. Specifically, in section 6.3, titled “Pressure,” the allowable error value for oil pressure measurement was removed, although the introductory text in the sections still states that it applies to oil. In section 6.8, titled “Smoke,” the referenced standard ASTM D2156-94 was updated to ASTM D2156-09, which is the standard that is currently incorporated by reference in the vented heater test procedure. In section 8.6, titled “Jacket Loss Measurement,” figures 12 and 13 were replaced by a set of equations. In section 9.10, titled “Optional Test Procedures for Condensing Furnaces and Boilers That Have No Off-Period Flue Losses,” the maximum post-purge period to use a value of 0.05 for  $D_F$  and  $D_P$  increased from less than 5 seconds to less than or equal to 30 seconds for units with no measurable airflow through the combustion chamber and heat exchanger.

Issue B.2 DOE requests comment on whether removing the allowable error in the oil pressure measurement value from section 6.3 of the ANSI/ASHRAE 103-2017 standard was intentional. If so, DOE requests comment on what allowable error measurement should be used within the vented heater test procedure (Note: ANSI/ASHRAE 103-2007 stated  $\pm 0.5$  psi).

Issue B.3 DOE requests comment on whether the replacement of figures 12 and 13 with a set of equations in section 8.6 of ANSI/ASHRAE 103-2017 is appropriate for the vented heater test procedure.

Issue B.4 DOE requests comment on whether the maximum post-purge time should be increased from less than 5 seconds to less than or equal to 30 seconds for vented heaters with no measurable airflow through the combustion chamber and heat exchanger.

## 2. ANSI Z21.86

DOE is aware that ANSI Z21.86–2008 has been superseded by ANSI Z21.86–2016. DOE examined both versions of the ANSI Z21.86 standard and only found minor changes to sections incorporated by reference within the vented heater test procedure. Section 6 was moved to section 9, and section 8 was moved to section 11. The figures and tables referenced in these sections were moved from the “Tables Referenced In Part 1, Part II and Exhibits” and “Figures Referenced In Part 1, Part II and Exhibits” sections at the end of the standard to throughout the standard where they are first referenced. Accordingly, DOE expects that these changes would not substantively impact the test burden or measured energy consumption under the DOE test procedures.

### C. Test Method for Unvented Heaters

For electric heaters, section 2.1 of Appendix G specifies measuring and recording the maximum electrical power consumed when heating, in terms of kilowatts, and section 3.3 specifies calculating a rated output. For primary electric heaters only, section 3.1 of Appendix G

specifies the calculation for the national average annual energy consumption based on the maximum electrical power, and section 3.2 specifies a calculation for the annual energy consumption by geographic region. The calculation of national average annual energy consumption in section 3.1 of Appendix G is based on several assumptions, including the national average annual heating load hours of 2080, an adjustment factor of 0.77,<sup>3</sup> and a typical oversizing factor for primary electric heaters of 1.2.<sup>4</sup> The calculation of regional annual energy consumption in section 3.2 of Appendix G is based on the same assumptions as the national value, except that regional heating load hours are provided by a figure depicting geographic regions the United States and the associated heating load hours for each region.

Issue C.1 DOE requests comment on whether the assumptions for calculating the national and regional values of annual fuel energy consumption are still appropriate.

For unvented natural gas, propane, and oil heaters, section 2.2 of Appendix G specifies measuring the maximum fuel input rate of the heater over the course of one hour. Section 2.1 of Appendix G requires the maximum auxiliary electrical power to be recorded for unvented gas and oil heaters that use auxiliary electrical energy. Section 3.4 of Appendix G provides calculations to determine the rated output for unvented gas and oil heaters based on the measurements of the hourly input rate and maximum electrical power. DOE notes that Appendix

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<sup>3</sup> The adjustment factor is a multiplier to adjust the heating load hours to the approximate burner operating hours actually experienced by the system.

<sup>4</sup> The oversizing factor accounts for space heating products generally being oversized when compared to the actual heating load.

G currently does not specify calculating annual fuel energy consumption for unvented gas and oil heaters.

Issue C.2 DOE requests comment on whether annual fuel energy consumption should be calculated for unvented natural gas, propane, and oil heaters. If annual fuel energy consumption should be calculated, DOE requests comment on what equations and assumptions should be used.

For unvented heaters equipped with a pilot light and/or that use electrical energy, sections 2.3 and 2.4 of Appendix G specify measuring the fossil fuel input rate and/or standby electrical power, respectively. These values are not used in any calculations. If the pilot light is designed to be turned off by the user when not in use, and the heater has instructions for turning the unit off provided on a label on the heater near the gas control valve, then section 2.3.1 of Appendix G specifies that the measurement of pilot light energy consumption is not required. Similarly, if the heater is designed to be turned off when not in use, if turning the control to “off” will shut off the electrical supply, and if an instruction to turn off the unit is provided on a label on the heater, then section 2.4.1 of Appendix G specifies that the standby electrical power does not need to be measured.

In the December 17, 2012 final rule, DOE determined not to include standby mode and off mode energy use in the annual energy consumption calculations for unvented heaters because a detailed annual energy consumption accounting was not deemed appropriate for this product type (*i.e.*, there is no annual accounting at all for supplemental heaters and only a simplified assigned value for primary heaters). 77 FR 74559, 74561. In the August 30, 2010 NOPR that

preceded the December 17, 2012 final rule, DOE explained that the integration of standby mode and off mode energy was not necessary or appropriate for the following reasons:

1. The test procedure does not include energy efficiency or energy use metrics that would allow for the integration of standby mode and off mode energy use.
2. Standby mode energy use (defined as energy use during the heating season when the heater is not on) is as effective in heating the space as active mode energy use.
3. Off mode energy consumption (defined as non-heating-season energy consumption) could be considered ineffective energy use and, accordingly, could be minimized by prescribing a separate energy conservation standard. However, DOE lacked data on consumer use that would be needed to define a representative off mode for unvented heaters.<sup>5</sup>

*See* 75 FR 52892, 52898-52899 (Aug. 30, 2010).

Issue C.3 DOE requests comment on whether annual fuel energy consumption for unvented heaters should include standby mode and off mode energy use. DOE is also interested in detailed information on any additional test burden that would result from calculating annual

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<sup>5</sup> For example, DOE lacked information on the fraction of the year unvented heaters might be unplugged or otherwise disconnected from the energy source, and the extent to which pilot lights are turned off during the non-heating season.

fuel energy consumption with standby mode and off mode energy use and if so, the nature and extent of that burden.

Issue C.4 DOE requests any information in relation to annual and/or regional heating season data, heating mode operating hours, standby mode hours, and off mode hours for unvented heaters.

#### D. Test Method for Vented Heaters

For vented heaters, Appendix O specifies provisions for determining the product's AFUE, which is the efficiency descriptor established by EPCA for direct heating equipment. (42 U.S.C. 6291(22)(A))

As discussed above, section 3.8 of Appendix O contains provisions for testing vented heaters that utilize condensing technology. Condensing technology is a design strategy that increases the efficiency of a heating appliance by extracting additional thermal energy from the flue gases.<sup>6</sup> These provisions are essentially the same as those contained in ANSI/ASHRAE 103–2007 that are applicable to condensing furnaces and boilers. However, because of the numerous additions and modifications needed to apply the condensing technology provisions to vented heaters, DOE includes the condensing provisions in Appendix O, rather than incorporating by reference the relevant provisions of ANSI/ASHRAE 103–2007.

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<sup>6</sup> In a condensing system, water vapor contained within the flue gas (as a byproduct of the combustion process) is condensed and drained out of the system. The process of condensing water vapor into liquid water releases latent heat, which is transferred to the air stream, thereby increasing the heating efficiency.

Issue D.1 DOE requests comment and data on manufacturers' and test laboratories' experience with the condensing provisions in Appendix O. DOE requests detailed information regarding any test burden associated with conducting the condensing provisions, including the nature and extent of any such burden. DOE also requests comment on ways to potentially reduce any test burden of the provisions specific to condensing technology.

DOE has identified several areas of the vented heater test procedure that may warrant further review to determine whether additional detail or specification may be needed to improve the readability and ease of implementation of the test procedure.

In the definitions in section 1.0 of Appendix O, section 1.21 defines "manually controlled vented heaters" as either gas or oil fueled vented heaters equipped without thermostats. DOE believes some vented heaters could potentially be designed to operate with timers or electronic controls without being equipped with thermostats, but that are not manually controlled. DOE questions whether "manually controlled vented heaters" should be defined to exclude those "without automatic means of control or operation," as opposed to only those "without thermostats."

Issue D.2 DOE requests comment on whether the definition for "Manually controlled vented heater" should be amended, and if so, how.

Issue D.3 DOE also requests comment on whether the other definitions provided in section 1.0 of Appendix O are all still appropriate, or if other updates are needed.

Within section 4.0 of Appendix O, titled “Calculations,” the balance point temperature ( $T_C$ ) can be determined either with an equation or using the values provided in Table 3 of Appendix O. DOE recognizes that a value of  $T_C$  derived from the equation may not be the same as that obtained from Table 3.

Similarly, values for the fraction of the heating load and average outdoor temperature at the reduced and maximum operating modes (variables  $X_1$ ,  $X_2$ ,  $T_{OA}$ , and  $T_{OA^*}$ ) are determined using either Table 3 or Figure 1 of Appendix O (which provides a graph showing  $T_{OA}$ , and  $T_{OA^*}$  variables for any balance point temperature between 16 °F and 62 °F), or Figure 2 of Appendix O (which provides a graph showing variables  $X_1$  and  $X_2$  for any balance point temperature between 0 °F and 62 °F). DOE recognizes that Table 3, Figure 1, and Figure 2 may yield different results because Table 3 provides discrete values for  $X_1$ ,  $X_2$ ,  $T_{OA}$ , and  $T_{OA^*}$ , whereas Figure 1 and Figure 2 provide continuous graphical curves for determining the relevant variables. DOE reviewed a limited amount of test data in an effort to estimate the impact of the different methods for determining the aforementioned variables on the measured AFUE value. DOE found that the different methods resulted in a difference on the order of hundredths of a percentage point of AFUE, which DOE would not expect to affect the measured AFUE in most cases when rounded to a whole number. However, DOE seeks to further understand this issue and whether there are any known or potential impacts from the difference in values.

Issue D.4 DOE requests comment on whether the differences in the balance point temperature ( $T_C$ ) produced by the equation and as obtained from Table 3 can result in different results in the values for the fraction of the heating load ( $X_1$  and  $X_2$ ) and average outdoor

temperature at the reduced and maximum operating modes ( $T_{OA}$  and  $T_{OA*}$ ), and if so, the extent of any such difference.

Issue D.5 DOE requests comment on whether any differences in the values of  $X_1$ ,  $X_2$ ,  $T_{OA}$ , and  $T_{OA*}$  within Table 3 and Figures 1 and 2 could produce different results, especially in AFUE, and if so, the extent of such differences. If any such difference in results would occur, DOE requests comment on whether any of these variables should be obtained using equations instead of Table 3 or Figures 1 and 2.

In a notice of proposed rulemaking published October 24, 2013, DOE proposed an optional use of a default jacket loss value of 1 percent for vented floor furnaces, as an alternative to performing a jacket loss test. 78 FR 63410, 63415. In the January 6, 2015 final rule, DOE decided not to adopt the 1 percent default jacket loss value for vented floor furnaces after reviewing test data that revealed an average jacket loss of 3.05 percent. 80 FR 792, 794.

Issue D.6 DOE requests comment and test data on whether a higher default jacket loss value should be considered for vented floor furnaces.

DOE previously stated that DHE that can operate in manual or automatic modes should be tested in automatic mode. 80 FR 792, 795 (Jan. 6, 2015).

Issue D.7 DOE requests comment on whether DHE that have multiple automatic operation modes exist, and if so, whether further direction regarding the tested operating mode is necessary.

Section 3.6.1 of Appendix O specifies that on units with no measurable airflow through the unit when not in heating mode (as determined by a smoke stick test defined in section 3.6.2 of Appendix O), both the off-cycle flue gas draft factor ( $D_F$ ) and the ratio of flue gas mass flow during the off-period to the flue gas mass flow during the on-period ( $D_P$ ) may be set equal to 0.05. DOE is considering whether to allow models using condensing or induced draft technology to automatically be considered to have no measurable airflow, and, thus, be able to use the defined value of 0.05 for  $D_F$  and  $D_P$  without performing the smoke stick test.

Issue D.8 DOE requests comment on the extent to which vented heaters currently use the provisions in 3.6.1 and 3.6.2 of Appendix O, whether models with induced draft or condensing technology are always capable of meeting the conditions to use the default draft factor, and whether provisions should be added to the vented heater test procedure to allow condensing or induced draft DHE to be considered to have no measurable airflow and to use a constant value of 0.05 for  $D_F$  and  $D_P$  without confirmation testing.

#### E. Performance and Utility

DHE provides space heating (warm air) directly to the consumer's living space without the use of duct connections. Relevant to DHE may also be the ability to provide "quiet" operation, non-heating air circulation, and space humidification, as well as the aesthetic appearance of the unit.

Issue E.1 DOE requests comment whether the test procedures impact the availability of such features on DHE.

## F. Other Test Procedure Topics

In addition to the issues identified earlier in this document, DOE welcomes comment on any other aspect of the existing test procedures for DHE not already addressed by the specific areas identified in this document. DOE particularly seeks information that would improve the repeatability, reproducibility, and consumer representativeness of the test procedures. DOE also requests information that would help DOE create a procedure that would limit manufacturer test burden through streamlining or simplifying testing requirements. Comments regarding the repeatability and reproducibility are also welcome.

DOE also requests feedback on any potential amendments to the existing test procedure(s) that could be considered to address impacts on manufacturers, including small businesses. Regarding the Federal test method, DOE seeks comment on the degree to which the DOE test procedure should consider and be harmonized with the most recent relevant industry standards for DHE and whether any changes to the Federal test method would provide additional benefits to the public. DOE also requests comment on the benefits and burdens of adopting any industry/voluntary consensus-based or other appropriate test procedure, without modification.

Additionally, DOE requests comment on whether the existing test procedures limit a manufacturer's ability to provide additional features to consumers of DHE. DOE particularly seeks information on how the test procedures could be amended to reduce the cost of new or additional features and make it more likely that such features are included on DHE.

### III. Submission of Comments

DOE invites all interested parties to submit in writing by **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**, comments and information on matters addressed in this notice and on other matters relevant to DOE's consideration of amended test procedures for DHE. These comments and information will aid in the development of a test procedure NOPR for DHE if DOE determines that amended test procedures may be appropriate for these products.

Submitting comments via <http://www.regulations.gov>. The <http://www.regulations.gov> webpage will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. 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. Persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to <http://www.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 <http://www.regulations.gov> cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section.

DOE processes submissions made through <http://www.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 <http://www.regulations.gov> provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery, or postal mail. Comments and documents submitted via email, hand delivery, or postal mail also will be posted to <http://www.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 in 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 postal mail or hand delivery, please provide all items on

a CD, if feasible. It is not necessary to submit printed copies. No telefacsimiles (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 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. Pursuant 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 item; (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).

DOE considers public participation to be a very important part of the process for developing test procedures and energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in each stage of this process. Interactions with and between members of the public provide a balanced discussion of the issues and assist DOE in the process. Anyone who wishes to be added to the DOE mailing list to receive future notices and information about this process should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

Signed in Washington, D.C., on February 13, 2019.

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Steven Chalk

Acting Deputy Assistant Secretary for Energy Efficiency

Energy Efficiency and Renewable Energy

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