[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE-2019-BT-STD-0002]

Energy Conservation Program: Energy Conservation Standards 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 an effort to determine whether to amend the current energy conservation standards for direct heating equipment. Under the Energy Policy and Conservation Act of 1975, as amended ("EPCA"), DOE must periodically review these standards and publish either a notice of proposed rulemaking ("NOPR") to propose new standards for direct heating equipment or a notice of determination that the existing standards do not need to be amended. This request for information ("RFI") solicits information from the public to help DOE determine whether amended standards for direct heating equipment would result in significant energy savings and whether such standards would be technologically feasible and economically justified. 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-STD-0002, by any of the following methods:

1. *Federal eRulemaking Portal*: *http://www.regulations.gov.* Follow the instructions for submitting comments.
2. *E-mail*: *DHE2019STD0002@ee.doe.gov*. Include the docket number EERE-2019-BT-STD-0002 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, Energy Conservation Standards RFI for Direct Heating Equipment, Docket No. EERE-2019-BT-STD-0002, 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., 6th Floor, 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/#!docketDetail;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*.

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*.

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*.

SUPPLEMENTARY INFORMATION:

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I. Introduction

A. Authority and Background

The Energy Policy and Conservation Act of 1975, as amended ("EPCA" or "the Act"),[1] 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[2] 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 direct heating equipment (DHE), the subject of this document. (42 U.S.C. 6292(a)(9)) EPCA prescribed energy conservation standards for these products and directed DOE to conduct two cycles of rulemakings to determine whether to amend these standards. (42 U.S.C. 6295(e)(3) and (4))

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

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

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

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 in limited instances for particular State laws or regulations, in accordance with the procedures and other provisions of EPCA. (42 U.S.C. 6297(d))

DOE completed the first of the required rulemaking cycles in 2010 by publishing a final rule on April 16, 2010 ("April 2010 final rule") that adopted amended performance standards for certain DHE (*i.e.*, vented home heating equipment) manufactured on or after April 16, 2013. 75 FR 20112. In the April 2010 final rule, DOE did not issue standards for unvented home heating equipment, a subset of DHE, finding that such standards would produce insignificant energy savings. *Id* at 20130. Additionally, DOE completed a second rulemaking cycle for DHE by issuing a final determination to not amend standards for vented home heating equipment and to not to adopt standards for unvented home heating equipment on October 17, 2016 ("October 2016 final determination"). 81 FR 71325. The current energy conservation standards for DHE are located in title 10 of the Code of Federal Regulations ("CFR") part 430, section 32(i)(2). The currently applicable DOE test procedures for unvented and vented DHE appear at 10 CFR part 430, subpart B, appendix G and appendix O, respectively.

In the October 2016 final determination, DOE concluded that energy conservation standards should not be amended for DHE. DOE determined that the DHE market characteristics at the time were largely similar to those during the analysis for the April 2010 final rule, and that the technologies available for improving DHE energy efficiency had not advanced significantly since the publication of the April 2010 final rule. In addition, DOE determined that the conclusions reached in the April 2010 final rule regarding the benefits and burdens of more stringent standards for DHE were still relevant to the DHE market. Therefore, DOE concluded that amended energy conservation standards would not be economically justified. 81 FR 71325, 71325 (Oct. 17, 2016).

EPCA also requires that, not later than 6 years after the issuance of any final rule establishing or amending a standard, DOE evaluate the energy conservation standards for each type of covered product, including those at issue here, and publish either a notice of determination that standards do not need to be amended, or a NOPR including new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m)(1)) EPCA further provides that, not later than 3 years after the issuance of a final determination not to amend standards, DOE must publish either a notice of determination that standards for the product do not need to be amended, or a NOPR including new proposed energy conservation standards (proceeding to a final rule, as appropriate). (42 U.S.C. 6295(m)(3)(B)) DOE must make the analysis on which the determination is based publicly available and provide an opportunity for written comment. (42 U.S.C. 6295(m)(2)) In making a determination, DOE must evaluate whether more-stringent standards would: (1) yield a significant savings in energy

use and (2) be both technologically feasible and economically justified. (42 U.S.C. 6295(m)(1)(A)) DOE is publishing this RFI to collect data and information to inform its decision consistent with its obligations under EPCA.

B. Rulemaking Process

DOE must follow specific statutory criteria for prescribing new or amended standards for covered products. EPCA requires that any new or amended energy conservation standard be designed to achieve the maximum improvement in energy or water efficiency that is technologically feasible and economically justified. (42 U.S.C. 6295(o)(2)(A)) To determine whether a standard is economically justified, EPCA requires that DOE determine whether the benefits of the standard exceed its burdens by, to the greatest extent practicable, considering the following seven factors:

(1) The economic impact of the standard on the manufacturers and consumers of the affected products;

(2) The savings in operating costs throughout the estimated average life of the product compared to any increases in the initial cost, or maintenance expenses;

(3) The total projected amount of energy and water (if applicable) savings likely to result directly from the standard;

(4) Any lessening of the utility or the performance of the products likely to result from the standard;

(5) The impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the standard;

(6) The need for national energy and water conservation; and

(7) Other factors the Secretary of Energy (Secretary) considers relevant.

(42 U.S.C. 6295(o)(2)(B)(i)(I)–(VII))

DOE fulfills these and other applicable requirements by conducting a series of analyses throughout the rulemaking process. Table I.1 shows the individual analyses that are performed to satisfy each of the requirements within EPCA.

Table I.1 EPCA Requirements and Corresponding DOE Analysis

EPCA Requirement	Corresponding DOE Analysis
Technological Feasibility	• Market and Technology Assessment • Screening Analysis • Engineering Analysis
Economic Justification:	
1. Economic impact on manufacturers and consumers	• Manufacturer Impact Analysis • Life-Cycle Cost and Payback Period Analysis • Life-Cycle Cost Subgroup Analysis • Shipments Analysis
2. Lifetime operating cost savings compared to increased cost for the product	• Mark-ups for Product Price Determination • Energy and Water Use Determination • Life-Cycle Cost and Payback Period Analysis
3. Total projected energy savings	• Shipments Analysis • National Impact Analysis
4. Impact on utility or performance	• Screening Analysis • Engineering Analysis
5. Impact of any lessening of competition	• Manufacturer Impact Analysis
6. Need for national energy and water conservation	• Shipments Analysis • National Impact Analysis
7. Other factors the Secretary considers relevant	• Employment Impact Analysis • Utility Impact Analysis • Emissions Analysis • Monetization of Emission Reductions Benefits • Regulatory Impact Analysis

As detailed throughout this RFI, DOE is publishing this document seeking input and data from interested parties to aid in the development of the technical analyses on which DOE will ultimately rely to determine whether (and if so, how) to amend the standards for direct heating equipment.

II. Request for Information and Comments

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 standards for DHE may be warranted. Additionally, DOE welcomes comments on other issues relevant to this request for information that may not specifically be 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 energy conservation standards rulemakings, recordkeeping and reporting requirements, and compliance and certification requirements applicable to DHE while remaining consistent with the requirements of EPCA.

A. Products Covered by This Process

The definitions for DHE were most recently amended in a test procedure final rule. 80 FR 792 (Jan. 6, 2015). This RFI covers those products that meet the definitions of "direct heating equipment" and "home heating equipment,"[3] 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.

[3] DOE notes that DHE is defined at 10 CFR 430.2 as "vented home heating equipment" and "unvented home heating equipment"; however, the existing energy conservation standards apply only to product classes of vented home heating equipment. There are no existing energy conservation standards for unvented home heating equipment.

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

1. Unvented Heaters

Unvented heaters are 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 convention (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

Vented heaters are 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.

(5) "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.

Issue A.2 DOE requests comment on whether the definitions applicable to DHE require any revisions, and if so, how those definitions should be revised. Please provide a rationale for any suggested change. DOE also requests feedback on whether the sub-category definitions currently in place are appropriate or whether further modifications are needed. If these sub-category definitions need modifying, DOE seeks specific input on how to define these terms.

Issue A.3 DOE requests comment on whether additional product definitions are necessary to close any potential gaps in coverage between product types. DOE also seeks input on whether such products currently exist in the market or whether they are being planned for introduction.

B. Market and Technology Assessment

The market and technology assessment that DOE routinely conducts when analyzing the impacts of a potential new or amended energy conservation standard provides information about

the DHE industry that will be used in DOE's analysis throughout the rulemaking process. DOE uses qualitative and quantitative information to characterize the structure of the industry and market. DOE identifies manufacturers, estimates market shares and trends, addresses regulatory and non-regulatory initiatives intended to improve energy efficiency or reduce energy consumption, and explores the potential for efficiency improvements in the design and manufacturing of the subject products. DOE also reviews product literature, industry publications, and company websites, as well as information from trade journals, government agencies, and trade organizations. Additionally, DOE routinely conducts interviews with manufacturers to improve its assessment of the market and available technologies for DHE.

1. Product Classes

When evaluating and establishing energy conservation standards, DOE may divide covered products into product classes by the type of energy used, or by capacity or other performance-related features that justify a different standard. (42 U.S.C. 6295(q)) In making a determination whether capacity or another performance-related feature justifies a different standard, DOE must consider such factors as the utility of the feature to the consumer and other factors DOE deems appropriate. *Id*.

For DHE, the current energy conservation standards specified in 10 CFR 430.32(i)(2) are based on 11 product classes divided by equipment type (*i.e.*, wall, floor, or room), heat circulation type (*i.e.*, fan or gravity), and input capacity. Table II.1 lists the current product classes for DHE.

Table II.1 Current Direct Heating Equipment Product Classes

DHE Type	Heat Circulation Type	Input Rate, Btu/h
Wall	Fan	≤42,000
		>42,000
	Gravity	≤27,000
		>27,000 and ≤46,000
		>46,000
Floor	All	≤37,000
		>37,000
Room	All	≤20,000
		>20,000 and ≤27,000
		>27,000 and ≤46,000
		>46,000

Issue B.1 DOE requests feedback on the current DHE product classes and whether changes to these individual product classes and their descriptions should be made or whether certain classes should be merged or separated. DOE further requests feedback on whether combining certain classes could impact product utility by eliminating any performance-related features or impact the stringency of the current energy conservation standard for these products. DOE also requests comment on separating any of the existing product classes and whether it would impact product utility by eliminating any performance-related features or reduce any compliance burdens.

Issue B.2 DOE seeks information regarding any other new product classes it should consider for inclusion in its analysis. Specifically, DOE requests information on the performance-related features (*e.g.*, input capacity, equipment type, heater type, *etc.*) that provide unique consumer utility and data detailing the corresponding impacts on energy use that would justify separate product classes (*i.e.*, explanation for why the presence of these performance-related features would increase energy consumption).

2. Technology Assessment

In analyzing the feasibility of potential new or amended energy conservation standards, DOE uses information about existing and past technology options and prototype designs to help identify technologies that manufacturers could use to meet and/or exceed a given set of energy conservation standards under consideration. In consultation with interested parties, DOE intends to develop a list of technologies to consider in its analysis. That analysis will likely include a number of the technology options DOE previously considered during its most recent rulemaking for DHE. A complete list of those prior options appears in Table II.2. DOE has conducted a preliminary review and did not identify any new options.

Table II.2 Previously Considered Technology Options for Direct Heating Equipment from the April 2010 Final Rule and October 2016 Final Determination[4]

Technology Options
Increased heat exchanger surface area
Multiple flues
Multiple turns in flue
Direct vent (concentric)
Increased heat transfer coefficient
Electronic ignition
Thermal vent damper
Electrical vent damper
Power burner
Induced draft
Two-stage and modulating operation
Improved fan or blower motor efficiency
Increased insulation
Condensing
Condensing Pulse Combustion
Air circulation fan
Sealed combustion

[4] See chapter 3, section 3.3.2.2 in the April 2010 final rule technical support document (TSD) published during the rulemaking process, document #149 on *https://regulations.gov in docket ID EERE-2006-STD-0129*.

Issue B.3 DOE seeks information on the technologies listed in Table II.2 regarding their applicability to the current market and how these technologies may impact the efficiency of DHE as measured according to the DOE test procedure. DOE also seeks information on how these technologies may have changed since they were considered in the October 2016 Final Determination analysis. Specifically, DOE seeks information on the range of efficiencies or performance characteristics that are currently available for each technology option.

Issue B.4 DOE seeks comment on other technology options that it should consider for inclusion in its analysis. DOE is particularly interested in information for any potential new technology options regarding their market adoption, costs, and any concerns with incorporating them into products (*e.g.*, impacts on consumer utility, potential safety concerns, manufacturing/production/implementation issues).

C. Screening Analysis

The purpose of the screening analysis is to evaluate the technologies that improve equipment efficiency to determine which technologies will be eliminated from further consideration and which will be passed to the engineering analysis for further consideration.

DOE determines whether to eliminate certain technology options from further consideration based on the following criteria:

(1) Technological feasibility. Technologies that are not incorporated in commercial products or in working prototypes will not be considered further.

(2) Practicability to manufacture, install, and service. If it is determined that mass production of a technology in commercial products and reliable installation and servicing of the technology could not be achieved on the scale necessary to serve the relevant market at the time of the compliance date of the standard, then that technology will not be considered further.

(3) Impacts on equipment utility or equipment availability. If a technology is determined to have significant adverse impact on the utility of the equipment for significant subgroups of consumers, or result in the unavailability of any covered equipment type with performance characteristics (including reliability), features, sizes, capacities, and volumes that are substantially the same as equipment generally available in the United States at the time, it will not be considered further.

(4) Adverse impacts on health or safety. If it is determined that a technology will have significant adverse impacts on health or safety, it will not be considered further.

10 CFR part 430, subpart C, appendix A, sections 4(a)(4) and 5(b).

Technology options identified in the technology assessment are evaluated against these criteria using DOE analyses and inputs from interested parties (*e.g.*, manufacturers, trade organizations, and energy efficiency advocates). Technologies that pass through the screening analysis are referred to as "design options" in the engineering analysis. Technology options that fail to meet one or more of the four criteria are eliminated from consideration.

Additionally, DOE notes that the four screening criteria do not directly address the proprietary status of technology options. DOE only considers potential efficiency levels achieved through the use of proprietary designs in the engineering analysis if they are not part of a unique pathway to achieve the efficiency level (*i.e.*, if there are other non-proprietary technologies capable of achieving the same efficiency level).

Table II.3 summarizes the technology options that DOE screened out in the April 2010 final rule, and the applicable screening criteria.

Table II.3 Previously Screened Out Technology Options from the April 2010 Final Rule[5]

	EPCA Criteria (X = Basis for Screening Out)			
Screened Technology Option	**Technological Feasibility**	**Practicability to Manufacture, Install, and Service**	**Adverse Impact on Product Utility**	**Adverse Impacts on Health and Safety**
Increased heat transfer coefficient		X		
Power burner		X		
Condensing Pulse Combustion	X			
Improved fan or blower motor efficiency		X		

Issue C.1 DOE requests feedback on what impact, if any, the screening criteria described in this section would have on each of the technology options listed in Table II.2 with respect to DHE. Similarly, DOE seeks information regarding how these same criteria would affect any

[5] See chapter 4, section 4.2.2 in the April 2010 final rule TSD published during the rulemaking process, document #149 on *https://regulations.gov in docket ID EERE-2006-STD-0129.*

other technology options not already identified in this document with respect to their potential use in DHE.

Issue C.2 With respect to the screened out technology options listed in Table II.3, DOE seeks information on whether these options should, based on current and projected assessments regarding each of them, remain screened out under the screening criteria described in this section. With respect to each of these technology options, what steps, if any, could be (or have already been) taken to facilitate the introduction of each option as a means to improve the energy performance of DHE?

D. Engineering Analysis

The engineering analysis estimates the cost-efficiency relationship of products at different levels of increased energy efficiency ("efficiency levels"). This relationship serves as the basis for the cost-benefit calculations for consumers, manufacturers, and the Nation. In determining the cost-efficiency relationship, DOE estimates the change in manufacturer production cost ("MPC") associated with increasing the efficiency of products above the baseline, up to the maximum technologically feasible ("max-tech") efficiency level for each product class.

DOE historically has used the following three methodologies to generate incremental manufacturing costs and establish efficiency levels ("ELs") for analysis: (1) the design-option approach, which provides the incremental costs of adding to a baseline model design options that will improve its efficiency; (2) the efficiency-level approach, which provides the relative costs of

achieving increases in energy efficiency levels, without regard to the particular design options used to achieve such increases; and (3) the cost-assessment (or reverse engineering) approach, which provides "bottom-up" manufacturing cost assessments for achieving various levels of increased efficiency, based on detailed cost data for parts and material, labor, shipping/packaging, and investment for models that operate at particular efficiency levels.

In the analysis for the April 2010 final rule, DOE analyzed four product classes that were representative of the 11 total classes. Specifically, for each type of DHE (*i.e.*, wall fan, wall gravity, floor, room), DOE selected one "representative" input range for analysis and applied that analysis across all other input rate ranges for the given type of DHE. DOE developed a cost-efficiency relationship for each of these analyzed representative product classes that were used as the input for the downstream analyses conducted in support of that rulemaking. See chapter 5 of the April 2010 final rule TSD for the cost-efficiency curves developed in that rulemaking.

Issue D.1 DOE requests comment on whether it is necessary to individually analyze all 11 product classes, or whether the approach of analyzing a representative sub-set of product classes is appropriate for any potential future DHE energy conservation standards rulemaking. For example, analysis on the gas wall fan less than or equal to 42,000 Btu/h product classes may not be necessary if the analysis on the corresponding gas wall fan greater than 42,000 Btu/h product classes is applicable to both product classes. Additionally, DOE welcomes comment on potential approaches to apply the analyzed representative product class results to the other product classes, including the approach used for the April 2010 final rule. If it is necessary to individually analyze each of the 11 product classes (or more than the 11 classes), please provide

information on why aggregating certain products is not appropriate. If this approach is not appropriate, what alternative approaches should DOE consider using and why?[6]

1. Baseline Efficiency Levels

For each product class that is analyzed, DOE selects a baseline model as a reference point against which any changes resulting from new or amended energy conservation standards can be measured. The baseline model in each product class represents the characteristics of common or typical products in that class. Typically, a baseline model is one that just meets the current minimum energy conservation standards and provides basic consumer utility.

DOE uses baseline models for comparison in several phases of the analyses, including the engineering analysis, life-cycle cost ("LCC") analysis, payback period ("PBP") analysis, and national impact analysis ("NIA"). In the engineering analysis, to determine the changes in price to the consumer that result from amended standards, DOE compares the price of a baseline model to the price of a model at each higher efficiency level.

If it determines that a rulemaking is necessary, consistent with this analytical approach, DOE tentatively plans to consider the current minimum energy conservations standards (which went into effect April 16, 2013) to establish the baseline efficiency levels for each product class. The current standards for each product class are based on DHE type (wall, floor, or room), heat circulation type (fan or gravity), and input capacity. The current standards for DHE are found at 10 CFR 430.32(i)(2).

[6] See chapter 5, section 5.3 in the April 2010 final rule TSD published during the rulemaking process, document #149 on *https://regulations.gov in docket ID EERE-2006-STD-0129.*

Issue D.2 DOE requests feedback on whether using the current established energy conservation standards for DHE are appropriate baseline efficiency levels for DOE to apply to each product class in evaluating whether to amend the current energy conservation standards for these products. DOE requests data and suggestions to evaluate the baseline efficiency levels in order to better evaluate the potential for amending energy conservation standards for these products.

Issue D.3 DOE requests feedback on the appropriate baseline efficiency levels for any newly analyzed product classes that are not currently in place or for any contemplated combined or separated product classes, as discussed in section II.B.1 of this document. For product classes that would be newly analyzed (if any), DOE requests energy use data to develop a baseline relationship between energy use and input capacity.

2. Maximum Available and Maximum Technologically Feasible Levels

As part of DOE's analysis when considering potential amended standards, DOE determines the maximum available efficiency level and the maximum technologically feasible ("max-tech") efficiency level for each product class analyzed. The maximum available efficiency level is the highest-efficiency model currently available on the market for that class. The max-tech efficiency level represents the theoretical maximum possible efficiency if all available design options are incorporated in a model. In some cases, models at the max-tech efficiency level are not commercially available because, although the level is technically achievable, manufacturers have determined that it is not economically feasible (either for the manufacturer to produce or for consumers to purchase). However, DOE seeks to determine the max-tech level

for purposes of its analyses. The current maximum available efficiencies for the 11 existing product classes are included in Table II.4, along with the maximum available efficiencies from the April 2010 final rule and the October 2016 final determination.

Table II.4 Maximum Available Efficiency Levels -- Current and Previous Rulemakings

DHE Type	Heat Circulation Type	Input Rate, Btu/h	AFUE		
			April 2010*	October 2016**	Current***
Wall	Fan	≤42,000	83	92	93
		>42,000	80†	80	80
	Gravity	≤27,000	80	80	72
		>27,000 and ≤46,000	69†	69	69
		>46,000	69	70	70
Floor	All	≤37,000	57	57	57
		>37,000	58†	58	58
Room	All	≤20,000	59	71	71
		>20,000 and ≤27,000	63	66	66
		>27,000 and ≤46,000	81†	68	68
		>46,000	70	70	70

* Gas Appliance Manufacturers Associated Directory for Direct Heating Equipment downloaded March 2, 2009.
** Combination of Air-Conditioning, Heating, & Refrigeration Institute (AHRI) and DOE's Compliance Certification Management System (CCMS) databases downloaded on July 16, 2015.
*** Combination of AHRI and CCMS databases download on September 10, 2018
† Representative product classes analyzed in the April 2010 final rule.

In the April 2010 final rule, DOE determined max-tech efficiency levels using the technology options available at that time. For gas wall fan DHE with an input rate over 42,000 Btu/h, DOE identified a max-tech efficiency level design with induced draft combustion, resulting in an AFUE of 80 percent. For gas wall gravity DHE with an input rate over 27,000 Btu/h and up to 46,000 Btu/h, DOE identified 70 percent AFUE as a theoretical max-tech level, which was achievable with an improved heat exchanger design and electronic ignition. For gas floor DHE with an input rate over 37,000 Btu/h, DOE identified the max-tech efficiency level as 58 percent AFUE, which DOE stated could be reached using an improved heat exchanger design.

For gas room DHE with an input rate over 27,000 Btu/h and up to 46,000 Btu/h, DOE identified a theoretical max-tech efficiency level of 83 percent AFUE, which manufacturers could achieve using an electronic ignition and improved heat exchanger. 75 FR 20112, 20145-20146 (April 16, 2010).

In the October 2016 final determination, DOE noted that condensing gas wall fan DHE models with input rates at or below 42,000 Btu/h had become available, and DOE considered this the max-tech level for gas wall fan DHE. Based on information obtained during manufacturer interviews and a manufacturer production cost found through a teardown analysis performed for the proposed determination (81 FR 21276, 21280 (April 11, 2016)), DOE determined that condensing technology was not economically justified for gas wall fan DHE at that time. 81 FR 71325, 71328 (Oct. 17, 2016). During manufacturer interviews conducted leading up to the proposed determination, manufacturers indicated that condensing models are significantly more expensive to produce than non-condensing models, which DOE confirmed through its teardown analysis, which showed a 23 percent manufacturing cost increase for condensing units. Manufacturers also indicated that shipments were so low as to be negligible, and DOE noted that only one manufacturer produced a condensing gas wall fan DHE at that time. DOE stated in the final determination that manufacturers would need to make substantial investments in order to produce these units on a scale large enough to support a Federal minimum standard and that severe manufacturer impacts would be expected if an energy conservation standard were adopted at a level met through use of condensing technology. Therefore, DOE concluded the condensing technology option would not be economically justified at that time when analyzed for the Nation as a whole. *Id*. In DOE's preliminary

research for this RFI, it found that 2 out of the 4 manufacturers of gas wall fan DHE currently make products incorporating condensing technology.

Issue D.4 DOE seeks input on whether the maximum available efficiency levels are appropriate and technologically feasible for consideration as possible energy conservation standards for the products at issue, and if not, why not. DOE also seeks input on whether other maximum efficiency levels are possible with technologies, or combinations of technologies, not currently incorporated in available designs.

Issue D.5 DOE seeks feedback on what design options would be incorporated at a max-tech efficiency level, and the efficiencies associated with those levels. As part of this request, DOE also seeks information as to whether there are limitations on the use of certain combinations of design options.

3. Manufacturer Production Costs and Manufacturing Selling Price

As described at the beginning of this section, the main outputs of the engineering analysis are cost-efficiency relationships that describe the estimated increases in manufacturer production cost (MPC) associated with higher-efficiency products for the analyzed product classes. For the April 2010 final rule, DOE developed the cost-efficiency relationships by estimating the efficiency improvements and costs associated with incorporating specific design options into the assumed baseline model for each analyzed product class. 75 FR 20112, 20147-20149 (April 16, 2010).

Issue D.6 DOE requests feedback on how manufacturers would incorporate the technology options listed in Table II.2 to increase energy efficiency in DHE beyond the baseline. This includes information on the order in which manufacturers would incorporate the different technologies to incrementally improve the efficiencies of products. DOE also requests feedback on whether the increased energy efficiency would lead to other design changes that would not occur otherwise. DOE is also interested in information regarding any potential impact of design options on a manufacturer's ability to incorporate additional functions or attributes in response to consumer demand.

Issue D.7 DOE also seeks input on the change in MPC associated with incorporating each particular design option. Specifically, DOE is interested in whether and how the costs estimated for design options in the April 2010 final rule have changed since the time of that analysis. DOE also requests information on the investments necessary to incorporate specific design options, including, but not limited to, costs related to new or modified tooling (if any), materials, engineering, and development efforts to implement each design option, and manufacturing/production impacts.

Issue D.8 DOE requests comment on whether certain design options may not be applicable to (or incompatible with) specific product classes.

To account for manufacturers' non-production costs and profit margin, DOE applies a non-production cost multiplier (the manufacturer mark-up) to the MPC. The resulting manufacturer selling price ("MSP") is the price at which the manufacturer distributes a unit into

commerce. For the April 2010 final rule, DOE used a manufacturer mark-up of 1.35 for all DHE. See chapter 5 of the April 2010 final rule TSD.

Issue D.9 DOE requests feedback on whether a manufacturer mark-up of 1.35 is appropriate for all DHE.

E. Mark-up Analysis

The mark-ups analysis develops appropriate mark-ups (*e.g.*, for wholesalers, mechanical contractors, general contractors) in the distribution chain (*i.e.*, how the products are distributed from the manufacturer to the consumer) and sales taxes to convert the manufacturer sales prices ("MSP") derived in the engineering analysis to consumer prices, which are then used in the LCC and PBP analyses and other analyses. At each step in the distribution channel, companies mark up the price of the equipment to cover business costs and profit margin.

1. Distribution Channels

In generating end-user price inputs for the LCC analysis and NIA, DOE must identify distribution channels (*i.e.*, how the products are distributed from the manufacturer to the consumer) and estimate relative sales volumes through each channel. Two different markets exist for DHE: (1) replacements and new owners,[7] and (2) new construction. DOE intends to use similar distribution channels in its analysis as found in the April 2010 final rule. DHE is mainly

[7] New owners are defined as existing buildings that acquire a DHE for the first time during the analysis period. An example of new owner for DHE would be someone with an addition to an existing house where it would not be feasible to extend the house's primary heating system to the new space.

a replacement product.[8] For replacement and new owner applications, most sales go through distributors to contractors, and then to consumers as follows:

Manufacturer → Wholesaler → Mechanical Contractor → Consumer

In new home applications, most sales go through distributors to contractors hired by the builder as follows:

Manufacturer → Wholesaler → Mechanical Contractor → General Contractor → Consumer

Issue E.1 DOE requests information on the existence of any distribution channels that are used to distribute the products at issue into the market. DOE also requests data on the fraction of DHE sales in the residential sector that go through any identified channels.

2. Mark-ups

To develop mark-ups for the parties involved in the distribution of the equipment, DOE plans to primarily utilize: (1) the Heating, Air Conditioning & Refrigeration Distributors International ("HARDI") 2013 Profit Report[9] (for wholesalers) and (2) U.S. Census Bureau 2012 Economic Census data[10] on the residential building construction industry (for general contractors

[8] The Air-Conditioning, Heating, and Refrigeration Institute (AHRI) stated that less than 5 percent of DHE sales are for new construction projects. AHRI, *Comment #7 for RFI for Energy Conservation Standards for Energy Conservation Standards for Direct Heating Equipment and Pool Heaters* (April 27, 2015) (Available at: *https://www.regulations.gov/document?D=EERE-2015-BT-STD-0003-0007*) (Last accessed Oct. 2, 2018).
[9] Heating, Air Conditioning & Refrigeration Distributors International (HARDI), *2013 HARDI Profit Report* (Available at: *http://hardinet.org/*) (Last accessed Oct. 2, 2018).
[10] U.S. Census Bureau, *2012 Economic Census Data* (Available at: *http://www.census.gov/econ/*) (Last accessed Sept. 12, 2018).

and mechanical contractors). DOE also plans to use the 2005 Air Conditioning Contractors of America's ("ACCA") Financial Analysis on the Heating, Ventilation, Air-Conditioning, and Refrigeration ("HVACR") contracting industry[11] to disaggregate the mechanical contractor mark-ups into replacement and new construction markets. DOE will also consider updates to any of these materials that may publish during DOE's evaluation.

In addition to the mark-ups, DOE will derive State and local taxes from data provided by the Sales Tax Clearinghouse.[12] These data represent weighted-average taxes that include county and city rates. DOE will derive shipment-weighted-average tax values for each region considered in the analysis.

Issue E.2 DOE requests recent data and recommendations regarding data sources to establish the mark-ups for the parties involved with the distribution of DHE.

F. Energy Use Analysis

DOE conducts an energy use analysis to identify how products are used by consumers, and thereby determine the energy savings potential of energy efficiency improvements. DOE uses the annual energy consumption and energy-savings potential in the LCC and PBP analysis to establish the operating costs savings at various product efficiency levels. DOE will estimate the annual energy consumption of direct heating equipment at specified energy efficiency levels across a range of applications, household types, and climate zones. The annual energy

[11] Air Conditioning Contractors of America (ACCA), *Financial Analysis for the HVACR Contracting Industry* (2005) (Available at: http://www.acca.org/store/) (Last accessed Oct. 2, 2018).
[12] Sales Tax Clearinghouse Inc., *State Sales Tax Rates Along with Combined Average City and County Rates*. 2018 (Available at; *http://thestc.com/STrates.stm*) (Last accessed Oct. 2, 2018).

consumption includes use of natural gas, liquefied petroleum gas (LPG (*i.e.*, propane)), and electricity.

1. Sample Development

DOE intends to base the energy use analysis on key characteristics from the Energy Information Administration's ("EIA") 2015 Residential Energy Consumption Survey ("RECS")[13] for the subset of residential buildings that use DHEs. DOE also plans to include in its analysis DHE used in the commercial sector using EIA's 2012 Commercial Building Energy Consumption Survey ("CBECS").[14]

RECS and CBECS data include information on the DHE type, physical characteristics of buildings, fuels used, energy consumption and expenditures, and other relevant characteristics.[15] Based on RECS 2015 and CBECS 2012 data, DOE will develop a representative population of buildings for DHE. In addition, DOE intends to review other data sets (*e.g.*, data from the 2016 Residential Building Stock Assessment for the Northwest,[16] 2014 Commercial Building Stock Assessment for the Northwest,[17] 2015 Residential Statewide Baseline Study of New York

[13] Energy Information Administration (EIA), *2015 Residential Energy Consumption Survey (RECS)* (Available at: *https://www.eia.gov/consumption/residential/*) (Last accessed Oct. 2, 2018).
[14] Energy Information Administration (EIA), *2012 Commercial Building Energy Consumption Survey (CBECS)* (Available at: *http://www.eia.gov/consumption/commercial/*) (Last accessed Oct. 2, 2018).
[15] From RECS 2015, DOE intends to use households listed as using primary gas heating equipment from "built-in room heater burning gas, oil, or kerosene" (138 home sample is estimated to represent 2.8 million homes in 2015) and "built-in floor/wall pipeless furnace" (41 home sample is estimated to represent 0.8 million homes in 2015) and as secondary gas heating equipment from "some other equipment" (221 home sample is estimated to represent 4.2 million homes in 2015).
[16] Northwest Energy Efficiency Alliance (NEEA), *Residential Building Stock Assessment (2016)* (Available at: *https://dev.neea.org/data/residential-building-stock-assessment*) (Last accessed Oct. 2, 2018).
[17] Northwest Energy Efficiency Alliance (NEEA), *Commercial Building Stock Assessment (2014)* (Available at: *https://dev.neea.org/data/commercial-building-stock-assessments*) (Last accessed Oct. 2, 2018).

State,[18] 2006 California Commercial End-Use Survey,[19] and 2009 Residential Appliance Saturation Study[20]) to compare these to the RECS 2015 and CBECS 2012 data for the corresponding region.

Issue F.1 DOE requests comment on the overall method to determine the building sample for direct heating equipment and whether other factors should be considered in developing the building sample. In addition, DOE requests information on the installation applications of DHE, including, but not limited to the fraction of DHEs that are installed in residential and commercial applications, as well as how many DHE are typically installed per building.

2. Energy Use Calculations

To determine the site energy consumption by the DHEs installed in the building, DOE intends to use a methodology based on the energy use equations from the DOE test procedure for DHEs (10 CFR part 430, subpart B, appendix O, section 4.6). For each household or building in the sample, DOE plans to use RECS 2015 and CBECS 2012 reported heating energy consumption to estimate the heating load of the housing unit or building.[21] The estimation of heating loads requires data on the existing DHE characteristics (such as DHE type, fuel type,

[18] New York State Energy Research and Development Authority (NYSERDA), *Residential Statewide Baseline Study of New York State (July 2015)* (Available at: *https://www.nyserda.ny.gov/About/Publications/Building-Stock-and-Potential-Studies/Residential-Statewide-Baseline-Study-of-New-York-State*) (Last accessed Oct. 2, 2018).
[19] California Energy Commission (CEC), *2006 California Commercial End-Use Survey (2006)* (Available at: *http://www.energy.ca.gov/ceus/2006_enduse.html*) (Last accessed Oct. 2, 2018).
[20] California Energy Commission (CEC), *2009 Residential Appliance Saturation Study (RASS) (2009)* (Available at: *http://www.energy.ca.gov/appliances/rass/*) (Last accessed Oct. 2, 2018).
[21] The heating load represents the amount of heating required to keep a housing unit comfortable throughout an average year.

equipment size, and efficiency of the DHE). DOE intends to assign DHE characteristics of existing systems based on the distributions of DHE provided in historical versions of the AHRI model certification directory[22] and any other available historical data. The estimation of heating loads also requires calculating the electricity consumption of the blower (when applicable), because heat from the blower contributes to heating the housing unit. A large fraction of DHE are used as secondary heating equipment; therefore, DOE intends to adjust the house heating load for households that use the direct heating equipment as secondary heating equipment by using the reported fraction of heating energy consumption attributable to secondary heating products in RECS 2015. To complete the analysis, DOE plans to calculate the energy consumption of more energy efficient DHE alternatives replacing the existing DHE.

Issue F.2 DOE requests comment on the overall method to determine energy use of direct heating equipment and if other factors should be considered in developing the energy use methodology.

G. Life-Cycle Cost and Payback Period Analysis

DOE plans to conduct LCC and PBP analyses to evaluate the economic impacts on residential and commercial consumers of potential standards for DHEs. The effect of new or amended standards on residential and commercial consumers usually involves a reduction in operating cost and an increase in purchase cost.

DOE intends to analyze the potential for variability by performing the LCC and PBP

[22] AHRI, *Directory of Certified Product Performance for Direct Heating Equipment* (Available at: *https://www.ahridirectory.org/*) (Last accessed Oct. 2, 2018).

calculations on a representative sample of residential and commercial consumers. DOE plans to utilize the sample of buildings developed for the energy use analysis. DOE plans to model uncertainty in many of the inputs to the LCC and PBP analysis using Monte Carlo simulation and probability distributions. As a result, the LCC and PBP results will be presented as distributions of impacts compared to the no-new-standards case (*i.e.*, the case without amended standards).

Inputs to the LCC and PBP analysis are categorized as: (1) inputs for establishing the purchase expense, otherwise known as the total installed cost, and (2) inputs for calculating the operating costs. Each type of input is discussed in the paragraphs that follow.

1. Total Installed Cost

The primary inputs for establishing the total installed cost are the baseline customer price, incremental customer price increases resulting from a potential standard, and installation costs. Baseline prices and standard-level price increases will be determined by applying mark-ups to manufacturer selling price estimates and sales tax.

The installation cost is added to the customer price to arrive at a total installed cost. DOE intends to develop installation costs using the most recent RS Means data available.[23] DOE also intends to use regional labor costs to more accurately estimate installation costs by applying the appropriate regional labor cost from RS Means to each sampled DHE installation.

[23] RS Means, *2018 Mechanical Cost Data* (Available at: *https://www.rsmeans.com/products/books.aspx*) (Last accessed Oct. 2, 2018).

In conducting its analyses, DOE intends to utilize an installation cost methodology that is customized for each DHE product class. For DHEs in new owner installations or new construction, DOE plans to include costs such as adding gas piping, putting the DHE in place, and additional set-up. For replacement cases, in addition to the costs considered for new installations, DOE also plans to include the installation cost associated with disconnecting and removing the old DHE, as well as removal/disposal and permit fees, if applicable. In addition, DOE intends to assess whether installation costs vary with equipment efficiency, including design options that require a new electrical outlet (many existing DHE installations currently do not have electrical power input) or condensing DHE units that require new PVC venting and condensate withdrawal.

Issue G.1 DOE seeks input on any available installation cost data for DHEs. DOE also seeks input on the approach it intends to use to develop DHE installation costs, specifically, its intention to use the most recent RS Means Mechanical Cost Data.

2. Operating Costs

The primary inputs for calculating the operating costs of DHEs are energy consumption, equipment efficiency, energy prices, maintenance and repair costs, equipment lifetime, and discount rates. Both equipment lifetime and discount rates are used to calculate the present value of future operating costs.

The product energy consumption is the site energy use associated with providing space heating to the room of a building. DOE intends to utilize the site energy use calculation methodology described in section II.F of this document to determine product energy use. DOE

also plans to assess the potential applicability of the "rebound effect" in the energy consumption for DHE. A rebound effect occurs when a product that is made more efficient is used more intensively, so that the expected energy savings from the efficiency improvement may not fully materialize. However, at this time, DOE is not aware of any information about a rebound effect for DHE.

Issue G.2 DOE seeks comments and data on any rebound effect that may be associated with more-efficient DHE.

The repair cost is the expense to repair or replace components of the covered product that have failed. The maintenance cost is the expense of regular scheduled product maintenance to ensure the continued operation of the covered product over time. These costs cover all labor and material costs associated with the repair or maintenance. DOE intends to develop repair and maintenance costs using the most recent RS Means data available[24] and manufacturer literature.

DOE intends to assess whether repair or maintenance costs vary with equipment efficiency and product class. In addition, DOE plans to consider the cases in which the equipment is covered by warranty, service, and/or maintenance agreements. More specifically, DOE intends to account for the maintenance cost associated with the manufacturer-recommended annual maintenance prior to the heating season.

DOE will determine the repair cost using an approach that reflects the cost and the

[24] RS Means, *2018 Facilities Maintenance & Repair Cost Data* (Available at: *https://www.rsmeans.com/products/books.aspx*) (Last accessed Oct. 2, 2018).

service life of the components that are likely to fail. DOE plans to consider component repair costs that might fail during the lifetime of the product, including the pilot ignition, electronic ignition, circulating blower, and induced draft fan.

Issue G.3 DOE requests feedback and data on whether maintenance costs differ in comparison to the baseline maintenance costs for any of the specific technology options listed in Table II.2 and Table II.3. To the extent that these costs differ, DOE seeks supporting data and the reasons for those differences.

Issue G.4 DOE requests information and data on the frequency of repair and repair costs by product class for the technology options listed in Table II.2 and Table II.3. DOE is also interested in whether consumers simply replace the products when they fail as opposed to repairing them.

Issue G.5 DOE also seeks comment on the extent to which repair or maintenance costs are covered by warranty, service, and/or maintenance agreements.

Equipment lifetime is the age at which a unit is retired from service. DOE intends to conduct a literature review of DHE lifetime data together with any stakeholder lifetime data to develop a Weibull probability distribution to characterize DHE lifetime.[25]

[25] A Weibull probability distribution is a continuous distribution function typically used in reliability engineering and equipment failure analysis. If the data are available, DOE also plans to take into account differences in DHE lifetime based on usage and application.

Issue G.6 DOE requests product lifetime data and information on whether product lifetime varies based on DHE product class, application, or efficiency.

DOE measures LCC and PBP impacts of potential standard levels relative to a no-new-standards case that reflects the likely market in the absence of amended standards. DOE plans to develop efficiency market shares (*i.e.*, the distribution of product shipments by efficiency) for DHEs, for the anticipated year in which compliance with any potential amended standards would be required. DOE is not aware of any shipment data to estimate the market shares of different DHE energy efficiency levels in the no-new-standards case. DOE is particularly interested in receiving such data. If no market share data become available, DOE intends to use data on the number of DHE models at different energy efficiency levels, as reported in DOE's compliance certification database,[26] historical versions of the AHRI model certification directory,[27] and from manufacturer literature.

Issue G.7 DOE requests information on the DHE market, including but not limited to, the current market share by different efficiency level and by product class, similar historical data, and information on expected future trends in the efficiency of DHEs.

H. Shipments Analysis

DOE develops shipments forecasts of DHE to calculate the national impacts of potential amended energy conservation standards on energy consumption, net present value ("NPV"), and

[26] U.S. Department of Energy, Compliance Certification Database: Unfired Hot Water Storage Tanks – Commercial (Available at: *https://www.regulations.doe.gov/certification-data/products.html*) (Last accessed Oct. 2, 2018).
[27] AHRI, *Directory of Certified Product Performance for Direct Heating Equipment* (Available at: *https://www.ahridirectory.org/*) (Last accessed Oct. 2, 2018).

future manufacturer cash flows. DOE shipments projections are based on available historical data broken out by product class, input capacity, and efficiency. Current sales estimates allow for a more accurate model that captures recent trends in the market. From the April 2010 final rule, DOE has DHE historical shipment data from AHRI for wall furnaces from 1990 to 1998 and from 2000 to 2006, for floor furnaces from 1990 to 2007, and for room heaters from 1990 to 2005.[28,29] DOE has limited disaggregated shipments for fan and gravity wall furnaces and by input capacity.[30]

Issue H.1 DOE requests annual sales data (*i.e.*, number of shipments) for each DHE product class from 2008-2018.

An example table of the types of data requested for 2008-2018 shipments can be found in Table II.5. Interested parties are also encouraged to provide additional shipment data as may be relevant including data before 2008.

Table II.5 Summary Table of Shipments-Related Data Requests

Equipment Type	Heat Circulation Type	Input Rate, Btu/h	Annual Shipments (number sold)										
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Wall	Fan	≤42,000											
		>42,000											
	Gravity	≤27,000											
		>27,000 and ≤46,000											
		>46,000											
Floor	All	≤37,000											
		>37,000											

[28]AHRI, *AHRI Shipments Data*, March 3, 2008. (Note: 1990–2006 Wall furnaces data disaggregated by vented wall furnaces and direct-vent wall furnaces).
[29] AHRI, *AHRI Floor Furnace Supplemental Shipments Data*, March 11, 2008.
[30] AHRI, *AHRI Wall Furnace Supplemental Shipments Data*, May 19, 2008. (Note: 2002–2006 shipments for wall gravity furnace over 27 to 46 kBtu/h and wall fan furnace above over 42 kBtu/h only).

Room	All	≤20,000											
		>20,000 and ≤27,000											
		>27,000 and ≤46,000											
		>46,000											

If disaggregated fractions of annual sales are not available at the product type level, DOE requests more aggregated fractions of annual shipments at the category level.

Issue H.2 If available, DOE requests the same information in Table II.5 by efficiency.

I. Manufacturer Impact Analysis

The purpose of the manufacturer impact analysis ("MIA") is to estimate the financial impact of new or amended energy conservation standards on manufacturers of DHE, and to evaluate the potential impact of such standards on direct employment and manufacturing capacity. The MIA includes both quantitative and qualitative aspects. The quantitative part of the MIA primarily relies on the Government Regulatory Impact Model ("GRIM"), an industry cash-flow model adapted for each product in this analysis, with the key output being the industry net present value ("INPV"), which is used to assess the financial impacts of a potential standard. The qualitative part of the MIA addresses the potential impacts of energy conservation standards on manufacturing capacity and industry competition, as well as factors such as product characteristics, impacts on particular subgroups of firms, and important market and product trends.

As part of the MIA, DOE intends to analyze impacts of potential amended energy conservation standards on subgroups of manufacturers of covered products, including small

business manufacturers. DOE uses the Small Business Administration's ("SBA") small business size standards to determine whether manufacturers qualify as small businesses, which are listed by the applicable North American Industry Classification System ("NAICS") code.[31] Manufacturing of consumer DHE is classified under NAICS 333414, "Heating Equipment (except Warm Air Furnaces) Manufacturing," and the SBA sets a threshold of 500 employees or less for a domestic entity to be considered as a small business. This employee threshold includes all employees in a business's parent company and any other subsidiaries.

One aspect of assessing manufacturer burden involves examining the cumulative impact of multiple DOE standards and the product-specific regulatory actions of other Federal agencies that affect the manufacturers of a covered product or equipment. While any one regulation may not impose a significant burden on manufacturers, the combined effects of several existing or impending regulations may have serious consequences for some manufacturers, groups of manufacturers, or an entire industry. Assessing the impact of a single regulation may overlook this cumulative regulatory burden. In addition to energy conservation standards, other regulations can significantly affect manufacturers' financial operations. Multiple regulations affecting the same manufacturer can strain profits and lead companies to abandon product lines or markets with lower expected future returns than competing products. For these reasons, DOE conducts an analysis of cumulative regulatory burden as part of its rulemakings pertaining to appliance efficiency.

Issue I.1 To the extent feasible, DOE seeks the names and contact information of any

[31] Available online at: *http://www.sba.gov/sites/default/files/Size_Standards_Table.pdf*.

domestic or foreign-based manufacturers that distribute DHE in the United States.

Issue I.2 DOE identified small businesses as a subgroup of manufacturers that could be disproportionally impacted by amended energy conservation standards. DOE requests the names and contact information of small business manufacturers, as defined by the SBA's size threshold, that distribute DHE products in commerce in the United States. In addition, DOE requests comment on any other manufacturer subgroups that could be disproportionally impacted by amended energy conservation standards for DHE. DOE requests feedback on any potential approaches that could be considered to address impacts on manufacturers, including small businesses.

Issue I.3 DOE requests information regarding the cumulative regulatory burden impacts on manufacturers of DHE associated with: (1) other DOE standards applying to different products that these manufacturers may also make and (2) product-specific regulatory actions of other Federal agencies. DOE also requests comment on its methodology for computing cumulative regulatory burden and whether there are any flexibilities it can consider that would reduce this burden while remaining consistent with the requirements of EPCA.

J. Other Energy Conservation Standards Topics

1. Market Failures

In the field of economics, a market failure is a situation in which the market outcome does not maximize societal welfare. Such an outcome would result in unrealized potential welfare. DOE welcomes comment on any aspect of market failures, especially those in the context of amended energy conservation standards for DHE.

2. Market-based Approaches to Energy Conservation Standards

As part of its regulatory reform efforts, DOE published a request for information discussing key issues and requesting feedback on market-based approaches to energy conservation standards. 82 FR 56181 (Nov. 28, 2017). DOE requests comment on how market-based approaches to energy conservation standards might impact standards for these products, and specifically seeks comment on any considerations with respect to DHE.

In addition to the issues identified earlier in this document, DOE welcomes comment on any other aspect of energy conservation standards for DHE not already addressed by the specific areas identified in this document.

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 energy conservations standards for DHE. After the close of the comment period, DOE will review the public comments received and may begin collecting data and conducting the analyses discussed in this RFI.

Submitting comments via *http://www.regulations.gov*. The *http://www.regulations.gov* webpage requires you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies Office 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 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 postal mail or hand delivery, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No telefacsimilies (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 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).

DOE considers public participation to be a very important part of the process for developing energy conservation standards. DOE actively encourages the participation and interaction of the public during the comment period in each stage of the 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 or would like to request a public meeting should contact Appliance and Equipment Standards Program staff at (202) 287-1445 or via e-mail at *ApplianceStandardsQuestions@ee.doe.gov*.

Signed in Washington, DC, on February 13, 2019.

Steven Chalk
Acting Deputy Assistant Secretary for Energy Efficiency
Energy Efficiency and Renewable Energy