DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE-2017-BT-STD-0019]

RIN 1904-AD91

Energy Conservation Program: Energy Conservation Standards for Consumer Water Heaters

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

ACTION: Supplemental notice of proposed rulemaking and request for comment.

SUMMARY: The Energy Policy and Conservation Act, as amended ("EPCA"), prescribes energy conservation standards for various consumer products and certain commercial and industrial equipment, including consumer water heaters. On July 28, 2023, the U.S. Department of Energy ("DOE" or "the Department") proposed amended energy conservation standards for certain consumer water heaters, including circulating water heaters, along with supporting definitions. In this supplemental notice of proposed rulemaking ("SNOPR") DOE proposes to amend the definition for circulating water heaters and clarify that circulating water heaters would be subject to the proposed energy conservation standards for storage-type water heaters. DOE requests comment on these proposed definitions.

DATES: *Comments*: DOE will accept comments, data, and information regarding this SNOPR no later than **[INSERT DATE 14 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov* under docket number EERE–2017–BT–STD-0019. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE-2017-BT-STD-0019, by any of the following methods:

Email: *ConsumerWaterHeaters2017STD0019@ee.doe.gov*. Include the docket number EERE–2017–BT–STD-0019 in the subject line of the message.

Postal Mail: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (202) 287-1445. If possible, please submit all items on a compact disc ("CD"), in which case it is not necessary to include printed copies.

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 telefacsimiles ("faxes") will be accepted. For detailed instructions on submitting comments and additional information on this process, see section V 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 *www.regulations.gov*. All documents in the docket are listed in the *www.regulations.gov*

index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure.

The docket webpage can be found at *www.regulations.gov/docket/EERE-2017-BT-STD-0019*. The docket webpage contains instructions on how to access all documents, including public comments, in the docket. See section IV of this document for information on how to submit comments through *www.regulations.gov*.

EPCA requires the Attorney General to provide DOE a written determination of whether the proposed standard is likely to lessen competition. The U.S. Department of Justice Antitrust Division invites input from market participants and other interested persons with views on the likely competitive impact of the proposed standard. Interested persons may contact the Division at *energy.standards@usdoj.gov* on or before the date specified in the **DATES** section. Please indicate in the "Subject" line of your email the title and Docket Number of this proposed rulemaking.

FOR FURTHER INFORMATION CONTACT:

Ms. Julia Hegarty, 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. Email: *ApplianceStandardsQuestions@ee.doe.gov*.

Ms. Melanie Lampton, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. Telephone: (240) 751-5157. Email: *Melanie.Lampton@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 email: *ApplianceStandardsQuestions@ee.doe.gov*.

SUPPLEMENTARY INFORMATION:

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I. Synopsis

The Energy Policy and Conservation Act, [1] as amended, Public Law 94-163 (42 U.S.C. 6291–6317, as codified) authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. Title III, Part B of EPCA[2] established the Energy Conservation Program for Consumer Products Other Than Automobiles. (42 U.S.C. 6291-6309) These products include consumer water heaters, the subject of this proposed rulemaking.

On July 28, 2023, DOE published a notice of proposed rulemaking ("NOPR") proposing new and amended energy conservation standards for consumer water heaters. 88 FR 49058 (the "July 2023 NOPR"). These proposed standards, which are shown in Table I.1 of the July 2023 NOPR included separate standards for circulating water heaters. 88 FR 49058, 49060-49061. In response to the July 2023 NOPR, DOE received several comments from stakeholders requesting that DOE reconsider the standards proposed for circulating water heaters. In response to those comments, DOE has tentatively determined that these categories of water heaters should be treated as storage water heaters and, as a result, would be subject to the standards for storage water heaters proposed in the July 2023 NOPR. The Department requests additional comment on its tentative determination that circulating water heaters should be treated as storage water heaters.

[1] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116-260 (Dec. 27, 2020), which reflect the last statutory amendments that impact Parts A and A-1 of EPCA.

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

II. Introduction

The following section briefly discusses the relevant background of DOE's regulation of circulating water heaters. A more comprehensive discussion of the rulemaking history of consumer water heaters, including relevant statutory authorities, can be found in the July 2023 NOPR. 88 FR 49058, 49065-49068.

A. Background

On September 5, 2019, DOE issued an enforcement policy for consumer gas-fired "circulating water heaters" (the "September 2019 Enforcement Policy"). In that policy, DOE stated that it would not seek civil penalties for failing to certify these products or for non-compliance with the applicable standards, on or before December 31, 2021.[3] In the September 2019 Enforcement Policy, the Department stated it had become aware of an issue with respect to certain consumer instantaneous water heaters commonly referred to by industry as "circulating water heaters." These "circulating water heaters" operate differently than either the storage water heaters or the instantaneous water heaters that DOE considered in its previous rulemakings for consumer water heaters. DOE stated that it found several manufacturers producing consumer gas-fired "instantaneous" water heaters that are designed to be used with a volume of stored water (usually in a tank, but sometimes in a recirculating hot water system of sufficient volume) where the water heater does not directly provide hot water to fixtures, but rather replenishes heat lost from the tank or system through hot water draws or standby losses by circulating water to and from the tank or other system. Circulating water heaters are typically activated by an

[3] The September 2019 Enforcement Policy can be found online at: *www.energy.gov/sites/prod/files/2019/09/f66/Enforcement%20Policy-CirculatingWH.92019.pdf* (Last accessed: Oct. 30, 2023).

aquastat[4] installed in a separately sold storage tank or an inlet water temperature sensor. Due to these differences, circulating water heaters could not easily be tested using DOE's test procedure for consumer water heaters.

In a June 21, 2023, final rule amending the test procedure for consumer water heaters and residential-duty commercial water heaters (the "June 2023 TP Final Rule"), DOE, among other things, addressed circulating water heaters by establishing a definition and method of test to determine UEF ratings for these products. 88 FR 40406. Specifically, DOE defined a "circulating water heater" as an instantaneous or heat pump-type water heater that does not have an operational scheme in which the burner, heating element, or compressor initiates and/or terminates heating based on sensing flow; has a water temperature sensor located at the inlet or the outlet of the water heater or in a separate storage tank that is the primary means of initiating and terminating heating; and must be used in combination with a recirculating pump and either a separate storage tank or water circulation loop in order to achieve the water flow and temperature conditions recommended in the manufacturer's installation and operation instructions. 10 CFR 430.2. DOE also determined that circulating water heaters with input ratings below 200,000 Btu/h (for gas-fired), 210,000 Btu/h (for oil-fired), or 12 kW (for electric) meet the definitional criteria for instantaneous consumer water heaters. 88 FR 40406, 40420-40422. Under the amended test procedure, gas-fired circulating water heaters, oil-fired circulating water heaters, and electric resistance circulating water heaters (which were tentatively considered the baseline category of electric circulating water heaters in the July 2023 NOPR) are to be tested with unfired hot water storage tanks ("UFHWSTs") with measured volumes between 80 and 120 gallons. *See* section 4.10 of appendix E to

[4] An aquastat is a temperature measuring device typically used to control the water temperature in a separate hot water storage tank.

subpart B of 10 CFR part 430. DOE had determined that the relationship between standby losses and storage volume is similar for electric storage water heaters above 55 gallons and for UFHWSTs. Thus, in its analysis, DOE adjusted the UEF-based standards for instantaneous water heaters by applying the linear decreases in the currently applicable standards for electric storage water heaters greater than 55 gallons in rated storage volume to result in the converted standards for circulating water heaters. As a result, in the July 2023 NOPR, DOE proposed to establish updated UEF standards that reflect the new test method as discussed further in section IV.C.2 of that document, beginning with the currently applicable standards for instantaneous water heaters.

DOE received comments in response to the July 2023 NOPR regarding the proposed standards for circulating water heaters from the interested parties listed in Table II.1.

Table II.1 July 2023 NOPR Comments on Circulating Water Heater Standards[5]

Commenter(s)	Abbreviation	Comment No. in the Docket	Commenter Type
Bradford White Corporation	BWC	1164	Manufacturer
California Energy Commission	CEC	1173	State Agency
Rheem Manufacturing Company	Rheem	1177	Manufacturer
A.O. Smith Corporation	A.O. Smith	1182	Manufacturer
New York State Energy Research and Development Authority	NYSERDA	1192	State Agency
Air-Conditioning, Heating, and Refrigeration Institute	AHRI	1167	Trade Association

B. Deviation from Appendix A

In accordance with section 3(a) of 10 CFR part 430, subpart C, appendix A ("appendix A"), DOE notes that it is deviating from the provision in the Process Rule

[5] The parenthetical reference provides a reference for information located in the docket of DOE's rulemaking to develop energy conservation standards for consumer water heaters. (Docket No. EERE-2017-BT-STD-0019, which is maintained at *www.regulations.gov*). The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

regarding the length of the comment period for a NOPR. Section 6(f)(2) of the Process Rule specifies that the length of the public comment period for a NOPR will be not less than 75 calendar days. For this limited-scope SNOPR, DOE has opted instead to provide a shorter comment period. DOE believes a shorter comment period is appropriate as this SNOPR solely addresses the categorization of circulating water heaters. The comment period provided will provide interested parties with a meaningful opportunity to comment on the issue addressed in this supplemental proposal.

III. Discussion

DOE developed this supplemental proposal regarding circulating water heaters after considering oral and written comments, data, and information from interested parties that represent a variety of interests. The following discussion addresses issues raised by these commenters on this specific topic.

In response to the July 2023 NOPR, several commenters disagreed with DOE's decision to treat circulating water heaters as instantaneous-type water heaters. Commenters also expressed concerns that circulating water heater designs could be used in lieu of traditional storage water heaters to offer consumers alternatives to products which must comply with more-stringent standards.

For example, CEC stated that a circulating water heater connected to a recirculation loop, where reheat is triggered by the temperature of the water flowing through the loop, is effectively treating the loop itself as a storage tank. (CEC, No. 1173 at p. 9-10) Based on this comment, DOE understands that simplifying a circulating water heater system as essentially a water heater plus a separate storage tank is appropriate, even for products designed to work with recirculation loops and not tanks specifically.

NYSERDA stated that electric circulating water heaters are potentially capable of providing the same consumer utility as heat pump water heaters; therefore, the commenter recommended that DOE should either establish heat pump-level standards for these products or re-define circulating water heaters more narrowly so that they do not become the preferred market option to a heat pump water heater. NYSERDA suggested that DOE could address more-stringent, heat pump level standards for electric circulating water heaters in a separate rulemaking to ensure that the energy savings from this rulemaking are realized. (NYSERDA, No. 1192 at pp. 6-7) AHRI indicated that electric resistance circulating water heaters, while not presently sold with storage tanks (as this would make for a more difficult and less efficient installation), would not offer any benefit over an electric resistance storage water heater; therefore, there is confusion regarding the misalignment between electric circulating water heater standards and electric storage water heater standards. (AHRI, No. 1167 at pp. 10-11)

Along these same lines, CEC commented that a manufacturer could also separate the water heater into component parts in order to qualify for the current definition of a circulating water heater: a "kit" that includes the same heating element, storage tank and thermostat as a typical storage water heater, with the thermostat installed in the storage tank in the same manner as a storage water heater. (CEC, No. 1173 at p. 10) DOE understands the CEC comment may refer to manufacturers potentially selling storage water heaters as separate components, one of them being a "circulating water heater," in order to classify a product as a circulating water heater instead of as a storage water heater (which may have more stringent standards).

A.O. Smith stated that it believes that electric circulating water heaters meet the definition of an electric storage water heater and should therefore be held to the same

standards as electric storage water heaters because the electric circulating water heaters on the market today cannot operate independent of a storage tank. A.O. Smith indicated that it is not aware of any performance-related features that would justify the creation of a separate product class and efficiency level for circulating water heaters. Additionally, the manufacturer raised a concern that electric circulating water heaters could be used instead of heat pump water heaters, and this would undermine energy savings resulting from this rule if electric circulating water heaters were held to a less-stringent standard. (A.O. Smith, No. 1182 at pp. 12-13) Rheem commented that an electric circulating water heater can be used with any size tank to easily replace a water heater where a heat pump storage-type water heater would otherwise be required, and thus the standards for these products should be aligned to meet a UEF of 2.3. (Rheem, No. 1177 at pp. 14-15)

Regarding gas-fired circulating water heaters, A.O. Smith added that creating a gas-fired circulating water heater product class with efficiencies achievable by non-condensing technology is also likely to undermine the energy savings from the gas-fired instantaneous water heater standards being proposed at condensing-level. Unlike heat pump circulating water heaters, A.O. Smith stated, the "heat engine" of a gas-fired circulating water heater can be operated without the use of a storage tank, and therefore these can be sold separately in place of gas-fired instantaneous water heaters. A.O. Smith recommended that gas-fired circulating water heaters be required to meet the same stringency of standard as gas-fired instantaneous water heaters (*i.e.*, a condensing level). (A.O. Smith, No. 1182 at p. 13) By “heat engine,” DOE understands A.O. Smith is referring to the burner, blower, combustion chamber, and hot water heat exchanger, which altogether can output hot water at the setpoint temperature.

Rheem did not support deferring consideration of more-stringent standards for gas-fired circulating water heaters because these products can be direct replacements for <2 gallon gas-fired instantaneous water heaters, which would have to achieve condensing efficiencies as a result of this rulemaking. Rheem noted that DOE has existing and recently finalized standards that would require condensing technology for consumer gas-fired storage water heaters with a rated storage volume greater than 55 gallons and less than or equal to 100 gallons, as well as residential-duty commercial gas-fired storage water heaters.[6] Rheem claimed that a gas-fired circulating water heater could easily replace a water heater where condensing efficiencies would otherwise be required, and the commenter concluded by recommending that DOE align the standards for gas-fired circulating water heaters with the standards for <2-gallon gas-fired instantaneous water heaters. Specifically, Rheem suggested DOE change the intercept in the gas-fired circulating water heater standards equations to match the values proposed for <2-gallon gas-fired instantaneous water heaters. (Rheem, No. 1177 at p. 14)

In response, DOE notes that circulating water heaters contain very little to no water on their own (*i.e.*, are "tankless"), but, as was determined in the June 2023 TP Final Rule, require a separate volume of water in order to function properly when installed in the field. 88 FR 40406, 40443. In other words, the circulating water heater and its separate tank or recirculation loop must be treated as one system. When considering the entire system – the circulating water heater plus the stored water volume required for its operation in the field – these water heaters are operationally very similar to storage-type water heaters. Thus, DOE agrees with commenters and has tentatively determined that it

[6] On October 6, 2023, DOE published a final rule establishing amended energy conservation standards for commercial water heaters, including residential-duty gas-fired storage water heaters. 88 FR 69686, 69822.

is appropriate to classify circulating water heaters as storage-type water heaters under its regulations.

With respect to the issue of whether circulating water heaters should constitute a separate product class of storage-type water heaters, DOE notes that it must establish a separate standard for a group of covered products (*i.e.*, establish a separate product class) based on the type of energy used, or if DOE determines that the group of covered products has a capacity or other performance-related feature that other products do not have and such feature justifies a different standard. (42 U.S.C. 6295(q)) In determining whether a performance-related feature justifies a different standard, DOE must consider the utility of the feature to the consumer and other factors DOE determines are appropriate. (*Id.*)

DOE agrees with commenters who stated that circulating water heaters provide the same consumer utility as storage-type water heaters and has determined that there are no performance-related features which would support establishing a separate product class for circulating water heaters.

Further, in the June 2023 TP Final Rule, DOE established a new test method for circulating water heaters that requires them to be paired with a storage tank for testing, which is representative of how these products would be used in the field. DOE also defined the effective storage volume of circulating water heaters as the stored volume of hot water used when testing the circulating water heater (see section 6.3.1.1 of appendix E). 88 FR 40406, 40461. While there are no longer any models of circulating consumer water heaters on the market today, the products which could potentially exist would all be classified as storage-type under the EPCA definitions when the volume of water in the

tank is considered. For example, consumer gas-fired circulating water heaters must be tested with an 80- to 120-gallon UFHWST, resulting in effective storage volumes in that range. For 80 gallons, because EPCA defines instantaneous-type water heaters as having no more than one gallon of water per 4,000 Btu/h of input (*see* 42 U.S.C. 6291(27)(B)), the circulating water heater would need to have at least 320,000 Btu/h of heat input to be considered instantaneous-type. This input rate is too high to be considered a consumer water heater for which EPCA limits the maximum input rating to 200,000 Btu/h for instantaneous-type water heaters (*see* 42 U.S.C. 6291(27)(A)). Electric and oil-fired water heaters similarly would require an input rate well above the EPCA-defined maximum thresholds to be considered a consumer instantaneous-type water heater. Therefore, a designation of these products as consumer instantaneous-type water heaters is inaccurate and does not consider the function and operation of the product with its separately stored water.

There is also a clear parallel with split-system heat pump water heaters. These products, which consist of a heat pump module and a separate storage tank, have long been considered to be electric storage water heaters by DOE and do not have separate standards. In the July 2023 NOPR, DOE stated that it has not identified any unique performance-related features offered by split-system heat pump water heaters that would warrant a separate product class consideration at this time. 88 FR 49058, 49080. DOE also identified split-system heat pump water heaters as storage-type water heaters in the June 2023 TP Final Rule. 88 FR 40406, 40417.

The comments from A.O. Smith regarding gas-fired circulating water heaters appear to state that gas-fired circulating water heaters can be potential substitutes for gas-fired instantaneous water heaters, hence this commenter suggested establishing

condensing-level standards for gas-fired circulating water heaters. However, Rheem's comments appear to suggest that gas-fired circulating water heaters could be substitutes for any other type of gas-fired water heater (instantaneous or storage-type), hence coming to the same conclusion that standards for gas-fired circulating water heaters should reflect a condensing efficiency.

DOE's test procedure in appendix E requires that gas-fired circulating water heaters be tested with an UFHWST having a volume between 80 and 120 gallons. (*See* section 4.10 of appendix E.) A re-classification of gas-fired circulating water heaters as storage-type water heaters results in condensing-level standards if the gas-fired circulating water heater is tested with an UFHWST that is between 80 and 100 gallons: such a configuration would result in an effective storage volume for the circulating water heater being 80 to 100 gallons, and for these volumes the current standards at 10 CFR 430.32(d) generally correspond to condensing efficiencies. If tested with an UFHWST that is between 100 and 120 gallons, the proposed standards correspond to noncondensing efficiencies.[7] In the July 2023 NOPR, DOE proposed standards for gas-fired storage water heaters using effective storage volume instead of rated storage volume such that, under the re-classification proposed in this SNOPR, gas-fired circulating water heaters and traditional gas-fired storage water heaters can be evaluated on an equivalent basis.

DOE has tentatively determined that gas-fired circulating water heaters would not be direct substitutes for gas-fired instantaneous water heaters based on two factors that define circulating water heaters. First, circulating water heaters are defined as being

[7] DOE received comments from stakeholders presenting concerns with the lower stringency of the standards for gas-fired storage water heaters larger than 100 gallons, and the Department aims to address these comments in a future document.

thermostatically activated and not flow-activated. In its analysis for more-stringent standards for the gas-fired instantaneous water heater product classes, the Department has only come across products which have flow-activated control schemes. Products with flow-activated control schemes must be tested for a maximum gallons per minute ("maximum GPM") delivery capacity and must be certified with such in order to determine a draw pattern. By contrast, products that are not flow-activated use a first-hour rating ("FHR") delivery capacity metric and must be certified with such in order to determine a draw pattern. Currently, there are no gas-fired instantaneous water heaters less than 2 gallons and higher than 50,000 Btu/h of input certified to DOE with FHR. All products currently certified to DOE as demonstrating compliance with gas-fired instantaneous water heater standards certify a maximum GPM, indicating that these are all flow-activated products.

Second, gas-fired instantaneous water heaters possess design options that allow these products to meet the consumer demand for hot water (*i.e.*, achieve a high enough outlet water temperature) without the need for a recirculation pump and a separate stored volume of water, whereas, by definition, circulating water heaters require these components in order to operate correctly. Gas-fired instantaneous water heaters are capable of raising the temperature of cold inlet water to 125 °F ±5 °F without a separate storage tank, and the maximum flow rate at which this is possible is the maximum GPM rating. Gas-fired instantaneous water heaters on the market today demonstrate this ability to raise the temperature to the desired setpoint at flow rates up to 6.0 gallons per minute. This is possible due to large burners with input rates as high as nearly 200,000 Btu/h, the statutory limit for gas-fired instantaneous water heaters. Classified as storage-type water heaters, gas-fired circulating water heaters may have no more than 75,000 Btu/h, which

will provide hot water at a much lower flow rate.[8] Because the vast majority of gas-fired instantaneous water heaters are certified to the medium and high draw patterns, it is unlikely for the "heat engine" of a circulating water heater to be applied in place of a gas-fired instantaneous water heater.

Altogether, the flow-activated control scheme and larger modulating burners are designs belonging to gas-fired instantaneous water heaters which allow gas-fired instantaneous water heaters to offer a distinct consumer utility. As discussed in the July 2023 NOPR, storage and instantaneous water heaters offer distinct utilities to a consumer: for example, instantaneous water heaters provide a continuous supply of hot water, up to the maximum flow rate, while storage water heaters are often better suited to handle large initial demands for hot water as opposed to continuous draws. 88 FR 49058, 49078. DOE has tentatively determined that gas-fired circulating water heaters cannot offer the utility of a continuous supply of hot water without having flow-activated control schemes and by virtue of reliance upon a recirculating pump and separate stored volume of hot water. Rather, the consumer utility of a gas-fired circulating water heater is akin to that of a gas-fired storage water heater.

DOE requests comment on its tentative determination that gas-fired circulating water heaters do not provide the same consumer utility as gas-fired instantaneous water heaters.

CEC stated their concern that DOE's proposed definition of circulating water heater could allow for several configurations of products beyond an instantaneous water heater paired with a recirculation pump. Per its comments, CEC believed that the

[8] At even 100 percent recovery efficiency, a 75,000 Btu/h burner can only instantaneously raise water from 58 °F to 125 °F at a maximum of 2.25 gallons per minute, which corresponds to the low draw pattern.

majority of consumer water heater products could meet the circulating water heater definition with no physical modification simply based on the lack of specificity provided regarding the control scheme and configuration. (CEC, No. 1173, p. 9) CEC recommended that the definition describe specific hardware differences (*e.g.*, thermostat controls, recirculation pump controls) in models manufactured for this purpose and not differences in published instructions or other documentation and added that definition also should not use the term "primary" and should instead state the specific methods of initiating and terminating heating that are allowed for this product type. (CEC, No. 1173 at pp. 10-11) CEC added that the phrase "must be used in combination with a recirculating pump and either a separate storage tank or water circulation loop in order to achieve the water flow and temperature conditions recommended in the manufacturer's installation and operation instructions" provides too much discretion to manufacturer-published recommendations to be enforceable. CEC suggested that, as written, this phrasing allows manufacturers to recommend one set of conditions for recirculating operation and specify alternate conditions for non-recirculating operation, provided that the recirculating conditions cannot be achieved without connection to a recirculating pump, resulting in a product that would be considered a circulating water heater solely due to its ability to be used with a recirculating loop. (CEC, No. 1173 at p. 10)

In response to these concerns, DOE notes that the re-classification of circulating water heaters as storage-type water heaters would entail that the same standards would apply for traditional storage water heaters and circulating water heaters, such that there would be no incentive to re-label a traditional storage water heater as a circulating water heater. As stated earlier in this section, DOE has tentatively determined that instantaneous, flow-activated water heaters are clearly distinguished from circulating water heaters. The definition of a circulating water heater, as proposed in this SNOPR,

will continue to state that such a water heater "does not have an operational scheme in which the burner, heating element, or compressor initiates and/or terminates heating based on sensing flow." Therefore, it is unlikely for traditional instantaneous water heaters to be re-labeled as circulating water heaters, because doing so would require manufacturers to remove the product's ability to activate/terminate based on sensing flow.

With regards to the temperature conditions recommended in the manufacturer's installation and operation instructions, the Department notes that it does not currently have sufficient information to apply additional specificity, nor did DOE receive comments from manufacturers suggesting what these conditions could be. As such, DOE is not proposing to amend this portion of the definition of a circulating water heater but may re-assess this in a future rulemaking.

Altogether, after considering this feedback from stakeholders, and reexamining the characteristics and consumer utility of circulating water heaters and storage-type water heaters, DOE has tentatively determined that the new and amended storage-type water heater standards, which were proposed in the July 2023 NOPR, are representative of circulating water heater designs. Therefore, DOE is proposing not to establish separate product classes for circulating water heaters; rather, DOE proposes that these products would be included in the applicable storage water heater product classes. Additionally, DOE is proposing to revise the definition of "circulating water heater" at 10 CFR 430.2 to designate these products as storage-type. The proposed revised definition of "circulating water heater" would additionally state that, "paired with a separate storage tank, a circulating water heater constitutes a storage-type water heater."

BWC had objected to establishing separate product classes for circulating water heaters and reiterated its previous comments on the test procedure rulemaking, stating that circulating water heaters are utilized exclusively in commercial and industrial settings. (BWC, No. 1164 at pp. 10-11, 45-46) BWC stated that because circulating water heaters are often paired with large hot water storage tanks, they are impractical for most residential applications due to space constraints and smaller hot water load demands. The commenter added that the creation of product classes for circulating water heaters will introduce additional burdens and confusion for manufacturers, testing laboratories, as well as installers in the field, while providing no practical benefit for consumers. (BWC, No. 1164 at pp. 10-11) Regarding gas-fired circulating water heaters, A.O. Smith had noted that models of these products present on the market today are only used in commercial applications, and the UFHWST tank pairing for these products is not common in residential applications as it would result in a more expensive installation compared to a gas-fired storage water heater. (A.O. Smith, No. 1182 at p. 13)

As a result of this proposed amendment to the definition of circulating water heaters, the storage-type input rate limits apply when determining whether a circulating water heater is a consumer water heater. Specifically, these are: 75,000 Btu/h for gas-fired circulating water heaters, 105,000 Btu/h for oil-fired circulating water heaters, 12 kW for electric resistance circulating water heaters, and 24 A at 250 V for heat pump circulating water heaters (see the definition for "water heater" at 10 CFR 430.2). Products with higher input rates would be commercial water heaters. For example, in earlier stages of this rulemaking, there were gas-fired circulating water heaters available on the market at input rates between 75,000 Btu/h and 200,000 Btu/h; these products would be classified as commercial water heaters should they re-enter the market. DOE understands

that this designation as commercial water heaters aligns with BWC's and A.O. Smith's suggestion that these water heaters are used in commercial applications.

DOE requests comment on its proposed amended definition for circulating water heaters. DOE is seeking information on whether it is appropriate to classify these products as storage-type water heaters, and what the implications to industry might be.

DOE has not identified any consumer water heaters currently available in the United States that qualify as circulating water heaters. If any such models do exist, they would have similar cost and use profiles as gas-fired storage water heater or electric storage water heater market and would have very few shipments. In the absence of any models or current shipments, DOE concludes that the life-cycle cost (LCC) analysis results, national impact analysis (NIA) results, and other downstream analysis results presented in the July 2023 NOPR are unchanged and remain representative, for gas-fired, oil-fired, and electric storage water heaters, with the proposed amended definition for circulating water heaters, and the proposed standards for storage water heaters are applicable to circulating water heaters.

In this SNOPR DOE maintains its other proposals from the NOPR and will address other topics in a potential final rule adopting amended energy conservation standards for consumer water heaters. The proposals from the July 2023 NOPR not pertaining to the topics addressed herein (regarding circulating water heaters) have not been revised in this SNOPR; however, DOE continues to evaluate feedback received in response to the July 2023 NOPR prior to finalization.

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866, 13563 and 14094

Executive Order ("E.O.")12866, "Regulatory Planning and Review," 58 FR 51735 (Oct. 4, 1993), as supplemented and reaffirmed by E.O. 13563, "Improving Regulation and Regulatory Review," 76 FR 3821 (Jan. 21, 2011) and amended by E.O. 14094, "Modernizing Regulatory Review," 88 FR 21879 (April 11, 2023), requires agencies, to the extent permitted by law, to (1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs (recognizing that some benefits and costs are difficult to quantify); (2) tailor regulations to impose the least burden on society, consistent with obtaining regulatory objectives, taking into account, among other things, and to the extent practicable, the costs of cumulative regulations; (3) select, in choosing among alternative regulatory approaches, those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity); (4) to the extent feasible, specify performance objectives, rather than specifying the behavior or manner of compliance that regulated entities must adopt; and (5) identify and assess available alternatives to direct regulation, including providing economic incentives to encourage the desired behavior, such as user fees or marketable permits, or providing information upon which choices can be made by the public. DOE emphasizes as well that E.O. 13563 requires agencies to use the best available techniques to quantify anticipated present and future benefits and costs as accurately as possible. In its guidance, the Office of Information and Regulatory Affairs ("OIRA") in the Office of Management and Budget ("OMB") has emphasized that such techniques may include identifying changing future compliance costs that might result from technological innovation or anticipated behavioral changes. For the reasons stated in the preamble, this proposed regulatory action is consistent with these principles.

Section 6(a) of E.O. 12866 also requires agencies to submit "significant regulatory actions" to OIRA for review. OIRA has determined that the July 2023 NOPR constitutes a "significant regulatory action" within the scope of section 3(f)(1) of E.O. 12866. Accordingly, pursuant to section 6(a)(3)(C) of E.O. 12866, DOE has provided to OIRA an assessment, including the underlying analysis, of benefits and costs anticipated from the proposed regulatory action, together with, to the extent feasible, a quantification of those costs; and an assessment, including the underlying analysis, of costs and benefits of potentially effective and reasonably feasible alternatives to the planned regulation, and an explanation why the planned regulatory action is preferable to the identified potential alternatives. These assessments are summarized in the July 2023 NOPR, and further detail can be found in the accompanying technical support document.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of an initial regulatory flexibility analysis ("IRFA") for any rule that by law must be proposed for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by E.O. 13272, "Proper Consideration of Small Entities in Agency Rulemaking," 67 FR 53461 (Aug. 16, 2002), DOE published procedures and policies on February 19, 2003, to ensure that the potential impacts of its rules on small entities are properly considered during the rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel's website (*www.energy.gov/gc/office-general-counsel*). The proposed definition change for circulating water heaters does not affect the IRFA presented in the July 2023 NOPR.

C. Review Under the Paperwork Reduction Act

Manufacturers of consumer water heaters must certify to DOE that their products comply with any applicable energy conservation standards. In certifying compliance, manufacturers must test their products according to the DOE test procedures for consumer water heaters, including any amendments adopted for those test procedures. DOE has established regulations for the certification and recordkeeping requirements for all covered consumer products and commercial equipment, including consumer water heaters. (See generally 10 CFR part 429). The collection-of-information requirement for the certification and recordkeeping is subject to review and approval by OMB under the Paperwork Reduction Act ("PRA"). This requirement has been approved by OMB under OMB control number 1910-1400. Public reporting burden for the certification is estimated to average 35 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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

D. Review Under the National Environmental Policy Act of 1969

DOE is analyzing this proposed regulation in accordance with the National Environmental Policy Act of 1969 ("NEPA") and DOE's NEPA implementing regulations (10 CFR part 1021). DOE's regulations include a categorical exclusion for rulemakings that establish energy conservation standards for consumer products or

industrial equipment. 10 CFR part 1021, subpart D, appendix B5.1. DOE anticipates that this rulemaking qualifies for categorical exclusion B5.1 because it is a rulemaking that establishes energy conservation standards for consumer products or industrial equipment, none of the exceptions identified in categorical exclusion B5.1(b) apply, no extraordinary circumstances exist that require further environmental analysis, and it otherwise meets the requirements for application of a categorical exclusion. See 10 CFR 1021.410. DOE will complete its NEPA review before issuing the final rule.

E. Review Under Executive Order 13132

E.O. 13132, "Federalism," 64 FR 43255 (Aug. 10, 1999), imposes certain requirements on Federal agencies formulating and implementing policies or regulations that preempt State law or that have federalism implications. The Executive order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE has examined this proposed rule and has tentatively determined that it would not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. EPCA governs and prescribes Federal preemption of State regulations as to energy conservation for the products that are the subject of this proposed rule. States can petition DOE for exemption from such preemption to the extent, and

based on criteria, set forth in EPCA. (42 U.S.C. 6297) Therefore, no further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 ("UMRA") requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Public Law 104-4, section 201 (codified at 2 U.S.C. 1531). For a proposed regulatory action likely to result in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of $100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed "significant intergovernmental mandate," and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect them. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820. DOE's policy statement is also available at *www.energy.gov/sites/prod/files/gcprod/documents/umra_97.pdf*.

Although this proposed rule does not contain a Federal intergovernmental mandate, it may require expenditures of $100 million or more in any one year by the private sector. Such expenditures may include: (1) investment in research and development and in capital expenditures by consumer water heaters manufacturers in the years between the final rule and the compliance date for the new standards and (2) incremental additional expenditures by consumers to purchase higher-efficiency consumer water heaters, starting at the compliance date for the applicable standard.

Section 202 of UMRA authorizes a Federal agency to respond to the content requirements of UMRA in any other statement or analysis that accompanies the proposed rule. (2 U.S.C. 1532(c)) The content requirements of section 202(b) of UMRA relevant to a private sector mandate substantially overlap the economic analysis requirements that apply under section 325(o) of EPCA and Executive Order 12866. The **SUPPLEMENTARY INFORMATION** section of the July 2023 NOPR and the accompanying technical support document respond to those requirements.

Under section 205 of UMRA, the Department is obligated to identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a written statement under section 202 is required. (2 U.S.C. 1535(a)) DOE is required to select from those alternatives the most cost-effective and least burdensome alternative that achieves the objectives of the proposed rule unless DOE publishes an explanation for doing otherwise, or the selection of such an alternative is inconsistent with law. As required by 42 U.S.C. 6295(m), the July 2023 NOPR would establish amended energy conservation standards for consumer water heaters that are designed to achieve the maximum improvement in energy efficiency that DOE has determined to be both technologically feasible and economically justified, as required by 6295(o)(2)(A) and 6295(o)(3)(B). A full discussion of the alternatives considered by DOE is presented in chapter 17 of the TSD for the July 2023 NOPR.

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

Section 654 of the Treasury and General Government Appropriations Act, 1999 (Pub. L. 105-277) requires Federal agencies to issue a Family Policymaking Assessment for any rule that may affect family well-being. This proposed rule would not have any

impact on the autonomy or integrity of the family as an institution. Accordingly, DOE has concluded that it is not necessary to prepare a Family Policymaking Assessment.

I. Review Under Executive Order 12630

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

J. Review Under the Treasury and General Government Appropriations Act, 2001

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for Federal agencies to review most disseminations of information to the public under information quality guidelines established by each agency pursuant to general guidelines issued by OMB. OMB's guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE's guidelines were published at 67 FR 62446 (Oct. 7, 2002). Pursuant to OMB Memorandum M-19-15, Improving Implementation of the Information Quality Act (April 24, 2019), DOE published updated guidelines which are available at *www.energy.gov/sites/prod/files/2019/12/f70/DOE%20Final%20Updated%20IQA%20Guidelines%20Dec%202019.pdf*. DOE has reviewed this NOPR under the OMB and DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

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

DOE has tentatively concluded that this regulatory action, which proposes amended energy conservation standards for consumer water heaters, is not a significant energy action because the proposed standards are not likely to have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as such by the Administrator at OIRA. Accordingly, DOE has not prepared a Statement of Energy Effects on this proposed rule.

L. Information Quality

On December 16, 2004, OMB, in consultation with the Office of Science and Technology Policy ("OSTP"), issued its Final Information Quality Bulletin for Peer Review ("the Bulletin"). 70 FR 2664 (Jan. 14, 2005). The Bulletin establishes that

certain scientific information shall be peer reviewed by qualified specialists before it is disseminated by the Federal Government, including influential scientific information related to agency regulatory actions. The purpose of the bulletin is to enhance the quality and credibility of the Government's scientific information. Under the Bulletin, the energy conservation standards rulemaking analyses are "influential scientific information," which the Bulletin defines as "scientific information the agency reasonably can determine will have, or does have, a clear and substantial impact on important public policies or private sector decisions." 70 FR 2664, 2667.

In response to OMB's Bulletin, DOE conducted formal peer reviews of the energy conservation standards development process and the analyses that are typically used and has prepared a report describing that peer review.[9] Generation of this report involved a rigorous, formal, and documented evaluation using objective criteria and qualified and independent reviewers to make a judgment as to the technical/scientific/business merit, the actual or anticipated results, and the productivity and management effectiveness of programs and/or projects. Because available data, models, and technological understanding have changed since 2007, DOE has engaged with the National Academy of Sciences to review DOE's analytical methodologies to ascertain whether modifications are needed to improve the Department's analyses. DOE is in the process of evaluating the resulting report.[10]

[9] The 2007 "Energy Conservation Standards Rulemaking Peer Review Report" is available at the following website: *energy.gov/eere/buildings/downloads/energy-conservation-standards-rulemaking-peer-review-report-0* (last accessed April 1, 2023).
[10] The report is available at *www.nationalacademies.org/our-work/review-of-methods-for-setting-building-and-equipment-performance-standards.*

V. Public Participation

A. Submission of Comments

DOE will accept comments, data, and information regarding this SNOPR no later than the date provided in the **DATES** section. Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section.

Submitting comments via www.regulations.gov. The *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 itself 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. Otherwise, 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 *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 *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 *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 *www.regulations.gov* provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or postal mail. Comments and documents submitted via email, hand delivery/courier, or postal mail also will be posted to *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/courier, please provide all items on a CD, if feasible, in which case 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, that are written in English, and that

are free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

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

Confidential Business Information. 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 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. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

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).

B. Issues on Which DOE Seeks Comment

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

(1) DOE requests comment on its tentative determination that gas-fired circulating water heaters do not provide the same consumer utility as gas-fired instantaneous water heaters.

(2) DOE requests comment on its proposed amended definition for circulating water heaters. DOE is seeking information on whether it is appropriate to classify these products as storage-type water heaters, and what the implications to industry might be.

VI. Approval of the Office of the Secretary

The Secretary of Energy has approved publication of this Supplemental notice of proposed rulemaking and request for comment.

List of Subjects in 10 CFR Part 430

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

Signing Authority

This document of the Department of Energy was signed on December 21, 2023, by Jeffrey Marootian, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and

submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on December 21, 2023.

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

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

PART 430 – ENERGY CONSERVATION PROGRAM FOR CONSUMER PRODUCTS

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

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

2. Amend § 430.2 by:

(a) Revising the definition for “Circulating water heater;” and

(b) Adding in alphabetical order, the definitions for "Electric circulating water heater," “Gas-fired circulating water heater,” and “Oil-fired circulating water heater.”

The revision and additions read as follows:

§ 430.2 Definitions.

* * * * *

Circulating water heater means a water heater that does not have an operational scheme in which the burner, heating element, or compressor initiates and/or terminates heating based on sensing flow; has a water temperature sensor located at the inlet or the outlet of the water heater or in a separate storage tank that is the primary means of initiating and terminating heating; and must be used in combination with a recirculating pump to circulate water and either a separate storage tank or water circulation loop in order to achieve the water flow and temperature conditions recommended in the

manufacturer's installation and operation instructions. Paired with a separate storage tank, a circulating water heater constitutes a storage-type water heater.

* * * * *

Electric circulating water heater means a circulating water heater with an input of 12 kW or less; contains more than one gallon of water per 4,000 Btu/h of input (including heat pump-only units with power inputs of no more than 24 A at 250 V).

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Gas-fired circulating water heater means a circulating water heater with a nominal input of 75,000 Btu/h or less; contains more than one gallon of water per 4,000 Btu/h of input.

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Oil-fired circulating water heater means a circulating water heater with a nominal input of 105,000 Btu/h or less; contains more than one gallon of water per 4,000 Btu/h of input.

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