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[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 430

[EERE-2019-BT-TP-0021]

RIN 1904-AE75

Energy Conservation Program: Test Procedures for Faucets and Showerheads

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

ACTION: Final rule.

SUMMARY: This final rule amends the test procedures for faucets and showerheads to incorporate the current version of the referenced industry standard, American Society of Mechanical Engineers Standard A112.18.1-2018/CSA B125.1-18, “Plumbing supply fittings.” This final rule also adds definitions for low-pressure water dispensers and pot fillers and excludes them from the faucet definition. Finally, this final rule provides further detail for conducting the flow rate measurement.

DATES: The effective date of this rule is **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. The amendments will be mandatory for product testing starting **[INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register on **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

ADDRESSES: The docket, which includes *Federal Register* notices, public meeting attendee lists and transcripts, 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 those containing information that is exempt from public disclosure.

A link to the docket webpage can be found at *www.regulations.gov/docket/EERE-2019-BT-TP-0021*. The docket webpage contains instructions on how to access all documents, including public comments, in the docket.

For further information on how to review the docket, contact the Appliance and Equipment Standards Program staff at (202) 287-1445 or by email: *ApplianceStandardsQuestions@ee.doe.gov*.

FOR FURTHER INFORMATION CONTACT:

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SUPPLEMENTARY INFORMATION:

DOE incorporates by reference the following industry standard into title 10 of the Code of Federal Regulations (“CFR”) part 430:

ASME A112.18.1-2018/CSA B125.1-2018, “Plumbing supply fittings,” CSA-published July 2018 (“ASME A112.18.1-2018”).

Copies of ASME A112.18.1-2018 can be obtained from the American Society of Mechanical Engineers (“ASME”) at 2 Park Avenue, New York, NY 10016-5990, or by visiting *www.asme.org*.

For a further discussion of this standard, *see* section IV.N of this document.

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I. Authority and Background

Faucets and showerheads are included in the list of “covered products” for which the U.S. Department of Energy (“DOE”) is authorized to establish and amend energy conservation standards and test procedures. (42 U.S.C. 6292(a)(15) and (16)) DOE’s test procedures for faucets and showerheads are currently prescribed at 10 CFR 430.23(s) and (t); 10 CFR subpart B of Part 430 Appendix S. The following sections discuss DOE’s authority to establish test procedures for faucets and showerheads and relevant background information regarding DOE’s consideration of test procedures for this equipment.

A. Authority

The Energy Policy and Conservation Act, Pub. L. 94-163, as amended (“EPCA”),¹ authorizes DOE to regulate the energy efficiency of a number of consumer products and certain industrial equipment. (42 U.S.C. 6291–6317) Title III, Part B of EPCA² 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 faucets and showerheads, the subject of this document. (42 U.S.C. 6292(a)(15) and (16))

The energy conservation program under EPCA consists essentially of four parts: (1) testing, (2) labeling, (3) Federal energy conservation standards, and (4) certification and enforcement procedures. Relevant provisions of EPCA 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).

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

¹ All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Pub. L. 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.

products comply with any relevant standards promulgated under EPCA. (42 U.S.C. 6295(s))

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

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

EPCA directs that the test procedures for faucets and showerheads are to be the test procedures specified in American Society of Mechanical Engineers (“ASME”) Standard A112.18.1M-1989, “Plumbing Fixture Fittings.” (42 U.S.C. 6293(b)(7)(A)) EPCA further directs that, if the test procedure requirements of ASME A112.18.1M-1989 are revised at any time and approved by the American National Standards Institute (“ANSI”), DOE must amend the Federal test procedures to conform to the revised ASME

standard, unless DOE determines by rule that to do so would not meet the requirements of EPCA that the test procedures be reasonably designed to produce test results which measure water use during a representative average use cycle as determined by DOE, and not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(7)(B); 42 U.S.C. 6293(b)(3))

EPCA also requires that, at least once every 7 years, DOE evaluate test procedures for each type of covered product, including faucets and showerheads, to determine whether amended test procedures would more accurately or fully comply with the requirements for the test procedures to not be unduly burdensome to conduct and be reasonably designed to produce test results that reflect energy efficiency, energy use, water use, or estimated operating costs during a representative average use cycle or period of use. (42 U.S.C. 6293(b)(1)(A))

If the Secretary determines, on her own behalf or in response to a petition by any interested person, that a test procedure should be prescribed or amended, the Secretary shall promptly publish in the *Federal Register* proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedures. The comment period on a proposed rule to amend a test procedure shall be at least 60 days and may not exceed 270 days. In prescribing or amending a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2)). If DOE determines that test

procedure revisions are not appropriate, DOE must publish its determination not to amend the test procedures. (42 U.S.C. 6293(b)(1)(A)(ii))

DOE is publishing this final rule in satisfaction of its statutory obligations. (42 U.S.C. 6293(b)(1)(A) and (7)(B))

B. Background

DOE's existing test procedures for faucets and showerheads appear at 10 CFR part 430, subpart B, appendix S ("appendix S") and 10 CFR 430.23 (s) and (t).

DOE last amended the test procedures for faucets and showerheads on October 23, 2013 ("October 2013 Final Rule"). 78 FR 62970. In that final rule, DOE adopted through reference certain provisions of the 2012 version of ASME A112.18.1 as part of the test procedures for faucets and showerheads. 78 FR 62970, 62980. Since then, the 2012 version of the ASME standard was re-affirmed in 2017, and then updated in 2018 to ASME A112.18.1-2018, which is the current version of the industry standard.

On May 31, 2022, DOE published a notice of proposed rulemaking ("NOPR") presenting DOE's proposals to amend the test procedures for faucets and showerheads. 87 FR 32351 ("May 2022 NOPR"). DOE held a public meeting related to this NOPR on June 22, 2022.

DOE received comments in response to the May 2022 NOPR from the interested parties listed in Table I.1.

Table I.1 List of Commenters with Written Submissions in Response to the May 2022 NOPR

Commenter(s)	Reference in this Final Rule	Comment No. in the Docket	Commenter Type
American Supply Association	ASA	13	Trade Association
Appliance Standards Awareness Project, Natural Resources Defense Council, American Council for an Energy-Efficient Economy, New York State Energy Research and Development Authority, Northwest Energy Efficiency Alliance, Washington State Department of Commerce	Joint Advocates	14	Efficiency Organizations
Pacific Gas and Electric Company, San Diego Gas and Electric, and Southern California Edison (collectively, the California Investor-Owned Utilities)	CA IOUs	15	Utility Companies
Plumbing Manufacturers International	PMI	16	Trade Association
Regulosity LLC, on behalf of Neoperl, Inc.	Neoperl	12	Manufacturer

A parenthetical reference at the end of a comment quotation or paraphrase provides the location of the item in the public record.³ To the extent that interested parties have provided written comments that are substantively consistent with any oral comments provided during the June 22, 2022 public meeting, DOE cites the written comments throughout this final rule.

II. Synopsis of the Final Rule

In this final rule, DOE amends 10 CFR 430.2, 10 CFR 430.3, and appendix S as follows:

³ The parenthetical reference provides a reference for information located in the docket of DOE's rulemaking to develop test procedures for faucets and showerheads. (Docket No. EERE-2019-BT-TP-0021, which is maintained at www.regulations.gov). The references are arranged as follows: (commenter name, comment docket ID number, page of that document).

- Include definitions for low-pressure water dispensers and pot fillers;
- Update the faucet definition by explicitly excluding low-pressure water dispensers and pot fillers;
- Incorporate by reference the latest revision to the applicable industry standard—ASME A112.18.1-2018, “Plumbing Supply Fittings,” as it pertains to flow rate measurement; and
- Add further direction for conducting the flow rate measurements.

The adopted amendments are summarized in Table II.1 compared to the test procedure provision prior to the amendment, as well as the reason for the adopted change.

Table II.1 Summary of Changes in the Amended Test Procedure

DOE Test Procedure Prior to Amendment	Amended Test Procedure	Attribution
Does not define low-pressure water dispensers or pot fillers.	Defines the terms low-pressure water dispensers and pot fillers.	Clarifies scope of coverage.
Does not explicitly exclude low-pressure water dispensers or pot fillers from the faucet definition.	Explicitly excludes low-pressure water dispensers and pot fillers from the faucet definition.	Clarifies scope of coverage.
Incorporates the 2012 version of ASME Standard A112.18.1 for measurement of flow rate.	Incorporates the 2018 version of ASME Standard A112.18.1.	Harmonize with updated industry standard.
Aside from referencing ASME Standard A112.18.1, includes limited guidance as to how to conduct the flow measurement test procedure.	Adds additional guidance, in accordance with current industry practices, to ensure appropriate equipment is being used and to ensure repeatability of the industry standards in both the fluid meter and time/volume flow rate test methods.	Response to stakeholder comment; improve repeatability of test results.

DOE has determined that the amendments described in section III and adopted in this document will not alter the measured flow rate of faucets and showerheads or require retesting or recertification solely as a result of DOE's adoption of the amendments to the

test procedures. Additionally, DOE has determined that the amendments will not increase the cost of testing. Discussion of DOE's actions are addressed in detail in section III of this document.

The effective date for the amended test procedures adopted in this final rule is 30 days after publication of this document in the *Federal Register*. Representations of water use must be based on testing in accordance with the amended test procedures beginning 180 days after the publication of this final rule.

III. Discussion

A. Scope of Applicability

This rulemaking applies to faucets and showerheads, which are discussed in the following sections.

1. Faucets

EPCA and DOE define “faucet” as a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator for a lavatory or kitchen faucet. (42 U.S.C. 6291(31)(E); 10 CFR 430.2). In the May 2022 NOPR, DOE discussed that it had identified products characterized in the market as “low-pressure water dispensers” and “pot fillers,” which appear to be within the scope of the statutory term “faucet.” 87 FR 32351, 32354 (see 86 FR 49261, 49263). DOE noted that it did not consider low-pressure water dispensers or pot fillers when establishing the current test procedure and standards for faucets. *Id.*

In the May 2022 NOPR, DOE also stated that the purpose of low-pressure water dispensers (“LPWDs”) and pot fillers is to fill a vessel with water (*e.g.*, a glass or a cooking vessel), and given this function, the amount of water provided by such products

during consumer use would be dependent on the volume of the vessel and independent of the flow rate of the product. 87 FR 32351, 32354. Accordingly, DOE noted that establishing conservation standards would not result in any water savings and could diminish the usefulness of such products by increasing the amount of time required to fill a vessel with a particular volume of water. 87 FR 32351, 32355.

As such, DOE tentatively determined that that low-pressure water dispensers and pot fillers are not within the definition of “faucet” for the purpose of Part A of EPCA, and DOE proposed to amend the definition of “faucet” at 10 CFR 430.2 to explicitly exclude low-pressure water dispensers and pot fillers. *Id.* at 32355. Therefore, in the May 2022 NOPR, DOE proposed to define a faucet as “a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator, excluding low-pressure water dispensers and pot fillers.” *Id.*

ASA commented that it did not see any issue with incorporating text that clarifies that LPWDs are excluded from the faucet definition. (ASA, No. 13 at p. 1)

PMI agreed with DOE that LPWDs and pot fillers are not within the definition of faucet. Accordingly, PMI recommended that DOE retain the current definition with the addition of the new text “excluding low-pressure water dispensers and pot fillers”, but without removing the existing text “for a lavatory or kitchen faucet.” (PMI, No. 16 at p. 2)

ASA noted that the proposed definition of the term faucet in the May 2022 NOPR removed the text “for a lavatory or kitchen faucet⁴” as it relates to replacement aerators and recommended that DOE not remove this text, asserting that its removal would lead to confusion and uncertainty as to whether replacement aerators for other purposes are covered. (ASA, No. 13 at p. 2) Relatedly, Neoperl noted the impacts of the proposed removal of the type of replacement aerator from the faucet definition. Specifically, Neoperl explained that “replacement aerator” is a generic term used for components of many products and that there are numerous products that use replacement aerators which are not covered products. Neoperl also stated that clarification of the type of replacement aerator ensures that only replacement aerators for covered products meet the definition of faucet and the removal of the clarification will result in regulation of non-covered products, such as replacement aerators for bidets and bidet seats.” (Neoperl, No. 12 at pp. 1-2)

The proposed change to the definition of faucet in the May 2022 NOPR was intended only to exclude LPWDs and pot fillers from the faucet definition. DOE did not intend for the proposed definition to change the wording or intent of the portion of the definition that relates to replacement aerators and is therefore reinstating the phrase “for a lavatory or kitchen faucet” as suggested by commenters.

For the reasons discussed in the May 2022 NOPR, and in consideration of comments received on the proposal, DOE is amending the definition for faucet at 10 CFR

⁴ As discussed, EPCA defined the term faucet as a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator *for a lavatory or kitchen faucet* [emphasis added].

430.2 to read “a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator for a lavatory or kitchen faucet, excluding low-pressure water dispensers and pot fillers.”

a. Low-Pressure Water Dispenser Definition

In conjunction with the proposed amendment to the definition of the term faucet, DOE proposed, in the May 2022 NOPR, to add a definition for the term “low pressure water dispenser” to mean a terminal fitting that dispenses drinking water at a pressure of 105 kPa (15 psi) or less. 87 FR 32351, 32355. DOE noted in the May 2022 NOPR that ASME A112.18.1-2018 defines a low-pressure water dispenser as “a terminal fitting located downstream of a pressure reducing valve that dispenses drinking hot water above 71 °C (160 °F) or cold water or both at a pressure of 105 kPa (15 psi) or less.” *Id.* DOE noted in the May 2022 NOPR that its authority generally applies to products as manufactured, not to the installation of products. (*See generally* 42 U.S.C. 6302) *Id.* DOE further noted that the proposed definition was a modification of the ASME A112.18.1-2018 definition to reference a product as manufactured, as opposed to its installation location. Additionally, DOE noted in the May 2022 NOPR that the proposed definition would exclude the drinking water temperature reference in the ASME A112.18.1-2018 definition. DOE tentatively determined in the May 2022 NOPR that the specified pressure was the relevant characteristic that would distinguish a low-pressure water dispenser from a faucet as defined for the purpose of applicability of the test procedure. *Id.*

DOE also discussed in the May 2022 NOPR that DOE generally tries to identify physical features in its definitions that would allow a third-party to easily distinguish

between products. *Id.* DOE has previously stated that relying on a manufacturer's intent can reduce regulatory transparency and creates challenges for enforcement. *Id.* (see 87 FR 13901, 13904). Due to these concerns with trying to interpret whether a product is designed to operate downstream of a pressure reducing valve or not, DOE stated in the May 2022 NOPR that it was also considering including other physical features in the definition that would allow low-pressure water dispensers to be easily identified, absent any information from the manufacturer. Based on research of these products, DOE understands that low-pressure water dispensers tend to have smaller diameter fittings for water connections. DOE has observed that LPWDs typically have 1/4" compression fittings, which is slightly smaller than the typical 3/8" compression fitting of a faucet. DOE requested comment as to whether a 1/4" compression fitting could be universally identified as a universal characteristic of a LPWD that distinguishes it from faucets. *Id.* DOE also requested comment as to any additional physical features that distinguish a low-pressure water dispenser from a faucet. *Id.*

ASA commented that while they generally recommend DOE to be consistent with the LPWD definition in the industry standard, they were not opposed to DOE's definition as proposed. ASA noted that placing prescriptive requirements, such as physical features, into a product definition could lead to restricting innovation in design. However, ASA commented that the key element in defining the term LPWD is the design pressure. (ASA, No. 13 at pp. 1-2)

PMI recommended that the definition of LPWD be aligned with the definition of the same term in ASME A112.18.1-2018 because plumbing manufacturers are already

testing LPWDs to the ASME standard. (PMI, No. 16 at p. 3) Accordingly, PMI recommended the following definition: Low-pressure water dispenser means a terminal fitting that dispenses hot water above 71 °C (160 °F) or cold water or both at a pressure of 105 kPa (15 psi) or less. *Id.* Further, PMI commented that a ¼" compression fitting can be used for other products, and so it is not universally used in LPWDs, which could also be supplied with ¼", 3/8", or push fit connections. (PMI, No. 16 at p. 3)

While DOE observed that many LPWDs use a ¼" compression fitting, the comment from PMI suggests that a ¼" compression fitting may not be a universal characteristic of a LPWD that distinguishes it from faucets. Accordingly, DOE has determined not to incorporate a compression fitting size into the definition of LPWD.

Regarding PMI's recommendation to more closely align the LPWD definition with the industry standard by including the temperature references in the definition, DOE notes that PMI did not identify how the temperature is a relevant characteristic to distinguish LPWDs from faucets. Both LPWDs and faucets can dispense "hot water above 71 °C (160 °F) or cold water or both." As such, DOE has determined that water temperature is not a universal characteristic that distinguishes LPWDs from faucets. DOE further notes that by excluding LPWDs from the scope of the DOE test procedure, manufacturers that are currently voluntarily measuring LPWD flow rate per ASME A112.18.1-2018 will not be impacted by the DOE definition of LPWD established in this final rule.

For the reasons discussed in the May 2022 NOPR, and in consideration of comments received, DOE is finalizing the definition for LPWD as “a terminal fitting that dispenses drinking water at a pressure of 105 kPA (15 psi) or less,” consistent with the definition proposed in the May 2022 NOPR.

b. Pot Filler Definition

In the May 2022 NOPR, DOE proposed to include a definition for “pot fillers”. DOE discussed concerns that had been raised through stakeholder comment that pot fillers could be installed over a kitchen sink. 87 FR 32351, 32355. DOE noted that ASME A112.18.1-2018 does not define the term “pot filler.” DOE stated in the May 2022 NOPR that it had assessed products marketed as residential pot fillers and observed several characteristics that make it unlikely for a pot filler to be installed for regular discharge into a kitchen sink. Specifically, DOE discussed in the May 2022 NOPR that all the residential pot fillers that DOE observed have an articulated arm,⁵ two shut-off valves,⁶ and are designed for a single supply line (*e.g.*, cold water).⁷ 87 FR 32351, 32355. Based on these identifying characteristics, DOE proposed to define pot filler in 10 CFR 430.2 as “a terminal fitting with an articulated arm and two or more shut-off valves that can accommodate only a single supply water inlet.” *Id.* DOE requested

⁵ As discussed in the May 2022 NOPR, the reason pot fillers have an articulated arm is because it allows the pot filler to extend over a cooking surface, such as burners on a range, to fill pots. When not in use, the articulation allows the pot filler to be pushed flat against the wall and out of the way of the cooking surface. 87 FR 32351, 32355.

⁶ As discussed in the May 2022 NOPR, one shut-off valve is located at or near the wall and the other is located at or near the output of the pot filler. Given that pot-fillers are typically installed over locations that do not have a drain (*e.g.*, over a stove), the two shut-off valves minimize the chance of accidentally turning on the pot filler when there is not a vessel underneath because an accidental bumping of one shut-off valve from the off to the on position does not turn on the pot filler. 87 FR 32351, 32355.

⁷ DOE noted in the May 2022 NOPR that having a single supply line limits the suitability of a pot filler for use as a kitchen faucet, which are generally supplied with both hot and cold water. 87 FR 32351, 32355.

comment as to whether other characteristics appropriately distinguished pot fillers from faucets or if there were other characteristics that were more appropriate. *Id.*

ASA commented that it was aware of pot fillers that have only one shut-off valve, and therefore the proposed term “and two or more shut-off valves” should not be included as part of the definition. (ASA, No. 13 at p. 2)

PMI stated that it concurs with DOE that products marketed as residential pot fillers make it unlikely for a pot filler to be installed for regular discharge into a kitchen sink. PMI commented that there are pot fillers available for sale that have a single shut-off valve as well as those that do not have an articulated arm. PMI provided a website link to a product marketed as a pot filler with a single shut-off valve. (PMI, No. 16 at p. 4) PMI suggested that DOE define a pot filler as a terminal fitting with only one outlet intended to discharge into a drinking, cooking, or other type of vessel without a drain. *Id.*

The examples provided by PMI in its comment indicate that not all pot fillers have two or more shut-off valves. Therefore, DOE has determined that pot fillers cannot be universally defined as having two or more shut-off valves and, as such, is removing this feature from the definition finalized in this final rule.

In addition, DOE conducted additional market research and identified a small number of products sold as residential pot fillers that use a “swivel spout” design, rather than an articulated arm. DOE has added PDF copies of webpages for two such products to the docket for this rulemaking.

As discussed in the May 2022 NOPR, the reason pot fillers typically have an articulated arm is because it allows the pot filler to extend (*i.e.*, reach) over a cooking surface, such as burners on a range, to fill pots. When not in use, the articulation allows the pot filler to be pushed flat against the wall and out of the way of the cooking surface. 87 FR 32351, 32355. For products with this “swivel spout” design, an identical functionality is provided in that the product can reach out over a cooking surface and be pushed flat (*i.e.*, retracted) when not in use.

Based on this review of the market, DOE has determined that, while most pot fillers use an articulated arm, some pot fillers may use an equivalent feature, which allows the pot filler to reach or extend over a cooking surface, such as burners on a range, to fill vessels. When not in use, this feature allows the pot filler to be retracted out of the way of the cooking surface. As such, in this final rule, DOE is clarifying the pot filler definition proposed in the May 2022 NOPR to specify that a pot filler has “an articulated arm or the equivalent that allows the product to reach to fill vessels when in use and allows the product to be retracted when not in use.”

With regard to PMI’s proposed definition, DOE notes that pot fillers are characterized by having only a single supply water inlet, as opposed to a single outlet. Additionally, a number of products, faucets, LPWDs, and pot fillers, all only have a single water outlet. In the May 2022 NOPR, DOE noted that pot fillers are designed for a single supply line (*e.g.*, cold water), limiting their suitability for use as a kitchen faucet, which are supplied with both hot and cold water. 87 FR 32351, 32355. DOE did not receive any comments suggesting that pot fillers are sold with more than one water

supply inlet and has not identified any residential pot fillers on the market designed for multiple water supply inlets. Therefore, DOE has determined that accommodating only a single supply inlet is a suitable characteristic for distinguishing pot fillers from faucets.

As discussed in the May 2022 NOPR, a key difference between residential pot fillers and faucets is that the intended purpose of pot fillers is to fill a vessel and, as such, the water usage associated with pot fillers is directly related to the size of the vessel. 87 FR 32351, 32354. Regarding PMI's comment that pot fillers are designed to discharge into vessels without a drain, although the intended use of a pot filler is to discharge into vessels without a drain, nothing about the design of a pot filler makes it suitable only for this purpose (*i.e.*, pot fillers are also capable of discharging into a sink with a drain). As discussed previously, DOE generally strives to identify physical features in its definitions that would allow a third party to easily distinguish between products, rather than relying on the intended use of a product—which can reduce regulatory transparency and create challenges for enforcement. As such, DOE has determined that the intended purpose of discharging into a vessel without a drain is not a suitable characteristic for distinguishing pot fillers from faucets.

In consideration of comments received in response to the proposed definition in the May 2022 NOPR, as well as additional market research conducted by DOE as described in the preceding paragraphs, in this final rule DOE is adopting a definition for pot filler as follows: a terminal fitting that can accommodate only a single supply water inlet, with an articulated arm or the equivalent that allows the product to reach to fill vessels when in use and allows the product to be retracted when not in use.

2. Showerheads

EPCA defines “showerhead” as “any showerhead (including a handheld showerhead), except a safety shower showerhead.” (42 U.S.C 6291(31)(D))

DOE further defines the term “showerhead” as a component or set of components distributed in commerce for attachment to a single supply fitting, for spraying water onto a bather, typically from an overhead position, excluding safety shower showerheads. 10 CFR 430.2. DOE defines “hand-held showerhead” to mean a showerhead that can be held or fixed in place for the purpose of spraying water onto a bather and that is connected to a flexible hose. *Id.* DOE defines “safety shower showerhead” as a showerhead designed to meet the requirements of International Safety Equipment Association (“ISEA”) Standard ISEA Z358.1, *American National Standard for Emergency Eyewash and Shower Equipment*. *Id.*

In the May 2022 NOPR, DOE discussed comments it had previously received regarding body sprays. 87 FR 32351, 32356. In a final rule published December 20, 2021 (“December 2021 Final Rule”), DOE withdrew its previous definition for body spray.⁸ DOE stated that the definition was inconsistent with the express purpose of EPCA to conserve water and does not best address the relationship between body sprays and showerheads. *Id.* at 86 FR 71799. Further, DOE stated that industry standards and the marketplace treat “showerheads” and “body sprays” similarly, with the only

⁸ On December 16, 2020, DOE published a final rule that adopted a definition for “body spray” as “a shower device for spraying water onto a bather from other than the overhead position. A body spray is not a showerhead.” 85 FR 81341, 81359.

difference being in the installation location. *Id.* In the May 2022 NOPR, DOE noted that its regulatory definition of showerhead at 10 CFR 430.2 includes the provision “typically from an overhead position.” 87 FR 32728, 32356. DOE stated that given the “typically from an overhead position” language in the showerhead definition, DOE cannot make a general statement that all body sprays are showerheads, as some body sprays are installed exclusively at body height and exclusively spray horizontally (*i.e.*, are not overhead). *Id.* Further, DOE noted in the May 2022 NOPR that it had previously stated that when testing shower tower (also known as “shower panel”) assemblies, which include body sprays, the components that are typically overhead (*i.e.*, the main showerhead and hand-held showerheads) are to be tested with the full flow diverted to those components only. *Id.* In addition, where it is not possible to isolate the covered portion of the shower tower, DOE has previously stated that all components are to be flowing at the maximum rate and the showerhead (which encompasses the component or set of components that are “typically from an overhead position”) measured separately. 78 FR 62970, 62975. Accordingly, DOE stated in the May 2022 NOPR that to the extent to which a body spray meets the definition of “showerhead,” such product is subject to the 2.5 gallon per minute (“gpm”) standard regardless of the consumer installation orientation. *Id.* DOE did not propose any amendments in the May 2022 NOPR with respect to the definition of showerhead.

In response to the May 2022 NOPR, the Joint Advocates commented that there is no technical or market distinction that differentiates body sprays from showerheads aside from the position of installation. Further, the Joint Advocates commented that “typically from an overhead position” is not grounded in statute and that they do not believe that

this phrase excludes certain body sprays because they spray horizontally simply due to their manner of installation. The Joint Advocates commented that if certain body sprays are excluded based on installation location, DOE should either explicitly include body sprays in the showerhead definition, or amend the definition to remove “typically from an overhead position.” (Joint Advocates, No. 14 at p. 2)

The CA IOUs commented that DOE should clarify that body sprays are subject to regulatory coverage. The CA IOUs stated that given the “typically from an overhead position” language in the definition, DOE cannot make a general statement that all body sprays are showerheads as some body sprays are installed at exclusively body height and exclusively spray horizontally (i.e. are not overhead). The CA IOUs stated that this statement seems to indicate a change since July 2021 in DOE’s position on body sprays. Specifically, the CA IOUs stated that the discussion in the May 2022 NOPR suggests that if a body spray were developed that could not operate from an overhead position, it would be exempt from regulatory coverage. The CA IOUs recommended that to avoid market confusion, DOE should change the definition to clarify that all showerheads, regardless of orientation, are subject to regulatory coverage. (CA IOUs, No. 15 at pp. 1–2)

In response to these comments from the Joint Advocates and the CA IOUs regarding the distinction between “body sprays” and “showerheads,” DOE reiterates that the December 2021 Final Rule withdrew the prior definition for the term “body spray.” 86 FR 71797. As such, DOE does not currently distinguish between products marketed as “body sprays” and products marketed as “showerheads.” Whether a particular product

is subject to DOE’s test procedure for showerheads is determined by whether that product meets the current definition of “showerhead,” as established by the December 2021 Final Rule.⁹ As an example, a particular product that sprays water onto a bather exclusively from a body height or horizontal position (*i.e.*, not from an overhead position) would not meet the definition of “showerhead” and would not be subject to DOE’s test procedure for showerheads. Noting that such products are available on the market, DOE reiterates that it cannot make a general statement that all products marketed as “body sprays” are showerheads, as the term showerhead is defined in the CFR. DOE further notes, however, that the definition of showerhead does not necessarily exclude all products marketed as “body sprays,” to the extent that such products meet the criteria of the showerhead definition.

Accordingly, for the reasons discussed in the May 2022 NOPR and summarized in preceding paragraphs, in this final rule, DOE maintains its definition of the term showerhead. To the extent that a product meets the definition of “showerhead,” such product is subject to DOE’s test procedure for showerheads.

B. Updates to Industry Standards

Appendix S currently references ASME A112.18.1-2012 for the flow rate test method. In the May 2022 NOPR, DOE proposed to update the faucets and showerheads test procedure to reference the latest version of the industry standard, which is ASME A112.18.1-2018. DOE discussed in the May 2022 NOPR that the updated standard does

⁹ See 86 FR 71797, 71810.

not include any amendments to the test procedures for faucets or showerheads. Further, DOE tentatively determined that referencing the most recent version of ASME A112.18.1-2018 would not impact: (1) the measured values of water use for faucets or showerheads under appendix S, (2) the representativeness of the results, or (3) the test burden. 87 FR 32351, 32357.

In response to the May 2022 NOPR, ASA supported the incorporation of ASME A112.18.1-2018. (ASA, No. 13 at p. 2) PMI agreed with DOE's tentative determination that updating the reference to ASME A112.18.1-2018 would not affect testing of faucets or showerheads or the measured flow rates, as manufacturers are already testing and certifying to this edition of the standard. (PMI, No. 16 at p. 4)

Accordingly, for the reasons discussed, DOE incorporates by reference ASME A112.18.1-2018 in this final rule.

C. Additional Direction in Conducting ASME A112.18.1-2018

DOE's current test procedure for evaluating the flow rate of faucets and showerheads is at appendix S and references ASME A112.18.1-2012. Specifically, DOE adopts through reference sections 5.4 and 5.4.2.2 of ASME A112.18.1-2012, which specify two alternate methods for measuring the flow rate of showerhead and faucets. One method, described as the fluid meter test in section 5.4.2.2(c) of ASME A112.18.1-2012, relies on a fluid meter installed upstream of the showerhead or faucet for measuring the flow rate. The second method, described as the time/volume method in section 5.4.2.2(d) of ASME A112.18.1-2012, relies on a container placed downstream of

the showerhead or faucet that collects the water output during a measured period of time. The flow rate calculation divides the volume of water collected by the duration of time.

As discussed in section III.B of this document, DOE is proposing to incorporate by reference ASME A112.18.1-2018. The two methods for measuring flow rate in ASME A112.18.1-2018 are identical to those in ASME A112.18.1-2012.

In the May 2022 NOPR, in response to feedback provided by stakeholders, DOE proposed several additional specifications to the test procedure. 87 FR 32351, 32357. To develop these additional specifications, DOE conducted a thorough review of ASME A112.18.1-2018 and consulted two testing laboratories to identify common testing practices. DOE also reviewed other similar test procedures, including ASTM International (“ASTM”) F2324 “Standard Test Method for Prerinse Spray Valves” (“ASTM F2324”), which is currently incorporated by reference at 10 CFR 431.263 and referenced in the test procedure for commercial prerinse spray valves in 10 CFR 431.264.

In the May 2022 NOPR, DOE proposed that if the fluid meter test method is used: (1) the fluid meter must be rated for the flow rate range of the product being tested, (2) the fluid meter must be calibrated in accordance with manufacturer printed instructions and at the frequency specified in the manufacturer printed instructions, and (3) the fluid meter must be capable of reporting flow to a resolution of no less than two significant figures. 87 FR 32351, 32357-32358.

The Joint Advocates supported DOE's proposal to add additional directions to the industry test method. The Joint Advocates commented that implementing additional detail in line with current testing practices would better ensure accurate and repeatable testing. (Joint Advocates, No. 14 at p. 1)

ASA commented that it was not opposed to the additional specifications proposed by DOE. (ASA, No. 13 at p. 3)

PMI requested clarification regarding DOE's proposed requirement for a fluid meter to have a resolution of no less than two significant figures for non-metering faucets and showerheads. PMI noted that the reporting requirements in 10 CFR 429.28(b)(2) and 10 CFR 429.29(b)(2) for non-metering faucets and showerheads are rounded to the nearest 0.1 gallons instead. PMI further commented that it agreed that fluid meters used for metering faucets should have a resolution of no less than two significant figures, rounded to the nearest 0.01 gallons, in accordance with 10 CFR 429.28(b)(2). PMI recommended that DOE update the requirements for the fluid meter to be rated, and have a flow rate resolution, for the flow rate range of the product being tested "to meet the reporting requirements of 10 CFR 429.28(b)(2) and 10 CFR 429.29(b)(2)." (PMI, No. 16 at p. 5)

DOE agrees with PMI that the resolution requirements for the fluid meter test should align with the reporting requirements established in 10 CFR 429.28(b)(2) and 10 CFR 429.29(b)(2). DOE notes that ASTM F2324 specifies both the unit and decimal place to which the measurement should be conducted, rather than specifying significant

figures, as proposed by DOE. DOE has determined that the approach used by ASTM F2324 more clearly specifies the required resolution and would avoid any potential confusion regarding resolution requirements when conducting measurements in different units (*i.e.*, measuring in liters versus gallons). The comments from PMI suggest that this convention is consistent with the current industry practices.

Accordingly, in this final rule, DOE is amending the requirements for fluid meter resolution to the following: When testing showerheads or non-metering faucets, ensure that the fluid meter has a resolution for flow rate of at least 0.1 gallons (0.4 liters) per minute. When testing a metering faucet, ensure that the fluid meter has a resolution for flow rate of at least 0.01 gallons (0.04 liters) per minute.

DOE notes that this language update only clarifies the intended resolution requirements from the May 2022 NOPR and is not a more stringent resolution than is currently required for certification. For example, a resolution requirement of two significant figures, as proposed in the May 2022 NOPR, would require flow rate to be measured to a resolution of 0.01 gpm, consistent with the resolution of at least 0.01 gallons (0.04 liters) per minute specified in this final rule.

In the May 2022 NOPR, DOE also proposed general instructions for measuring flow rate using the time/volume test method in ASME A112.18.1-2018. 87 FR 32351, 32358. DOE proposed that if the time/volume test is used: (1) the receiving container must be of sufficient size to contain all of the water for a single test and must have an opening size and/or partial cover, such that loss of water from splashing is minimized;

and (2) the test must be conducted for a minimum of 1 minute and the time must be measured using a stopwatch with a minimum resolution of 0.1 seconds. DOE further proposed to clarify that measuring and recording the temperature of the water in this type of test requires a thermocouple or similar device and only the following two approaches are permissible: (1) At the receiving container immediately after recording the mass of water, or (2) at the water in the supply line any time during the duration of the time/volume test. In addition, DOE proposed to require measuring the mass of water to at least two significant figures and converting the mass to volume based on the specific gravity of water at the recorded temperature. *Id.* DOE tentatively determined that these proposed amendments would provide an accurate method for measuring flow rate and would reflect current testing practice, and therefore would not affect testing burden.

In response to DOE's proposal to require measuring the mass of water to at least two significant figures, PMI commented that resolution of the measurement is the more meaningful specification. PMI commented that the density of water is 8.34 lbs./gal at 32 °F and that if 2.5 gallons of water is collected, it would weigh 20.85 lbs. PMI added that a measurement of 20.85 lbs is considered as four significant figures; when rounded to two significant figures the measurement would be 21 lbs. (PMI, No. 16 at p. 6)

Similar to previous discussion of resolution for fluid meters, DOE agrees with PMI's comment that resolution is a more meaningful specification for measuring the mass of water than the number of significant figures, as proposed by DOE. DOE notes that ASTM F2324 states that, when performing a test with the time/volume method, the analytical balance scale or equivalent device used when measuring the weight of the

water carboy “shall have a resolution of 0.01 lb. (5g).” DOE has determined that the approach used by ASTM F2324 avoids potential ambiguity regarding the required resolution. For these reasons, in this final rule, DOE is amending the requirement for measuring the mass of water to the following: measure the mass of water to a resolution of at least 0.01 lb. (0.005 kg).

In the May 2022 NOPR, DOE proposed adding a new section 2.1 (renumbered as section 3.0 in this final rule) to appendix S titled “General Instruction.” 87 FR 32351, 23365. Within this section, DOE proposed to specify general instructions for the fluid meter test in a new subsection 2.1.1 (renumbered as section 3.1 in this final rule), titled “Fluid Meter Test Method,” and for the time/volume test method in a new subsection 2.1.2 (renumbered as section 3.2 in this final rule), titled “Time/Volume Test Method.” *Id.*

In response to the May 2022 NOPR, DOE received several comments on the proposed title for subsection 2.1.1 (“Fluid Meter Test Method”; renumbered as section 3.1 in this final rule). Neoperl commented that it disagreed with DOE’s proposed title because a fluid meter is a type of laboratory equipment and can be known by many different common names, such as flow gauge, flow indicator, liquid meter, or flow rate sensor. Neoperl recommended that the name of the test method should describe the purpose of the test, instead of the laboratory equipment. (Neoperl, No. 12 at p. 2)

ASA recommended that the term "flow rate test" be used instead of "fluid meter test" to be consistent with the ASME standard and to represent the purpose of the test rather than the device used. (ASA, No. 13 at p. 3)

PMI suggested revising the title of proposed section 2.1.1 (renumbered as section 3.1 in this final rule) from "fluid meter test method" to one of the following options that PMI asserted would more clearly express the intent of the instructions: "Flow Test Method," "Flow Rate Test Method," or "Fluid Flow Indicator Test Method." PMI noted that several devices are capable of measuring the flow of water in a pipe at the necessary resolution and that in some cases, it may not be clear to the reader that the term flow meter as it is used in the title of the section is a general phrase intended to describe a device that measures the flow of water. (PMI, No. 16 at p. 5)

Having considered this feedback from stakeholders regarding the proposed section titles, in this final rule DOE is adopting updated titles to clarify, in the title, the purpose of the test: section 3.0 "General Instruction for Measuring Flow Rate"; section 3.1 "Using the Fluid Meter Method to Measure Flow Rate"; and section 3.2 "Using the Time/Volume Method to Measure Flow Rate."

DOE is also adding language to sections 3.1 and 3.2 to make more explicit that, although the term "Fluid Meter Method" is used in the title of section 3.1, the method provided in section 3.1 is relevant to all equipment and measures flow rate upstream of a showerhead or faucet. Similarly, the method provided in section 3.2 is relevant to all equipment used to measure flow rate downstream of a showerhead or faucet.

Specifically, DOE is adding language within section 3.1 to specify that the section applies when measuring flow rate upstream of a showerhead or faucet using a fluid meter (or equivalent device) as described in section 5.4.2.2(c) of ASME A112.18.1. DOE is adding similar language within section 3.2 to specify that the method described in this subsection is relevant when measuring flow rate downstream of the showerhead or faucet as described in section 5.4.2.2(d) of ASME A112.18.1.

DOE did not receive any comments related to any of the other amendments to appendix S proposed in the May 2022 NOPR not specifically discussed in the preceding sections of this document. For the reasons discussed in the May 2022 NOPR, DOE is adopting those amendments as proposed.

D. Flow Restrictor Retention Test Method

The current standards for showerheads include a requirement that when used as a component of a showerhead, a flow-restricting insert must be mechanically retained at the point of manufacture such that a force of 8.0 pounds force (“lbf”) (36 Newtons) or more is required to remove the flow-restricting insert, except that this requirement does not apply to showerheads for which removal of the flow-restricting insert would cause water to leak significantly from areas other than the spray face. 10 CFR 430.32(p).

In the October 2013 Final Rule, DOE explained that it had considered establishing a test procedure for measuring the force required to remove a flow-restricting insert, but stated that further investigation of the issue was necessary and did not adopt a test procedure for flow-restrictor retention. 78 FR 62970, 62974. In the May 2022

NOPR, addressed comments received from stakeholders recommending that DOE propose a test method for flow restrictor retention to verify compliance with the flow restricting insert requirement. DOE noted in the May 2022 NOPR that ASME A112.18.1-2018 does not include any test method for showerhead flow retention. 87 FR 32351, 32359. DOE stated that a challenge in developing a test procedure is that there are numerous flow-restrictor configurations and there may not be one test method to suit all possible flow restrictors. *Id.* Given the variation in design, DOE tentatively concluded that such a test method may hinder product design. *Id.* Further, DOE stated that it did not have any indication that there is an issue in practice with customers removing flow-restriction devices. *Id.* For these reasons, DOE did not propose a test method for flow restrictor retention in the May 2022 NOPR.

In response to the May 2022 NOPR, the Joint Advocates recommended that DOE develop a test method for flow-restrictor retention for showerheads. The Joint Advocates stated that EPCA includes a requirement for the retention of flow restricting devices in the energy conservation standard for showerheads, noting that this requirement is as much a part of the standard as the maximum flow rate but that it had not been address in the test procedure or ASME A112.18.1-2018. The Joint Advocates commented that although DOE stated in the NOPR that it has no indication that customers are removing flow restricting devices, numerous online articles provide detailed instructions on easily removing flow restrictors. The Joint Advocates also commented that restrictors may be removed by installers in misguided attempts to satisfy customers. Further, the Joint Advocates stated that a lack of a test method is a particular concern for States that have adopted showerhead standards that are more stringent than the Federal standard. The

Joint Advocates referenced showerhead manufacturers who provide 1.8 or 2.0 gpm showerheads with an optional 2.5 gpm flow restrictor in the box, stating that this creates a loophole in which compliance with State standards becomes the choice of the installer. Additionally, the Joint Advocates commented that flow restrictors serve a critical function, and their casual removal or replacement jeopardizes the effectiveness of the standard and its intended savings of energy and water. Finally, to accommodate the variety of showerhead designs, the Joint Advocates urged DOE to develop a typology of showerhead designs and removable flow-restriction devices and investigate one or more methods for measuring the force required for removal of flow restrictors. (Joint Advocates, No. 14 at pp. 2–3)

PMI agreed with DOE's tentative determination that a test method for flow restrictors should not be proposed, commenting that manufacturers of showerheads invest in research and development, prototypes, production, third-party certification, marketing, and distribution to produce a wide variety of showerheads that perform well to meet consumer needs and consumer satisfaction. Further, PMI commented that in many cases, flow restrictors are difficult to remove because the designs of the showerheads do not provide easy access for a tool to remove the flow restrictor. (PMI, No. 16 at p. 7)

Neoperl stated that it agrees with DOE that consumers do not remove flow restrictors from showerheads. Neoperl commented that consumers report satisfaction with showerhead performance. In addition, Neoperl commented that due to the numerous showerhead designs on the market, identification of the flow restrictor is often too difficult for a consumer. Neoperl stated that flow restrictors are difficult to remove

because the flow restrictor designs lack sufficient surface area or protrusions onto which a tool can be fastened to facilitate removal of the flow restrictor. (Neoperl, No. 12 at p. 3)

ASA commented that it was not aware of any data supporting the removal of flow restrictors from showerheads. ASA stated that it would be opposed to DOE taking any action on this issue without field data to indicate there is a problem. (ASA, No. 13 at p. 3)

DOE notes that the Joint Advocates did not provide any data or other information that would inform the prevalence of flow restrictors being removed from a showerhead by consumers. DOE notes that the availability or prevalence of website articles that provide instructions on removing flow restrictors does not indicate the prevalence of such actions by consumers. Other stakeholder comments summarized in the preceding paragraphs indicate that removal of flow-restricting devices by consumers is uncommon in practice. Further, DOE has not received any comment or information to indicate that a test method for flow-restrictor retention could be implemented without impacting design flexibility. As such, DOE does not have sufficient reason to believe that establishing a test procedure for retention of flow-restricting devices is necessary to maintain the effectiveness of the applicable standard. Accordingly, in this final rule, DOE is not adopting a test procedure for flow-restrictor retention.

E. Clarification to 10 CFR 430.23 and Appendix S

10 CFR 430.23(s) and (t) provide the test procedures for the measurement of water consumption of faucets and showerheads, respectively. 10 CFR 430.23(s) requires that “the maximum permissible water use allowed for lavatory faucets, lavatory replacement aerators, kitchen faucets, and kitchen replacement aerators, expressed in gallons and liters per minute (gpm and L/min), shall be measured in accordance to section 2(a) of appendix S of this subpart. The maximum permissible water use allowed for metering faucets, expressed in gallons and liters per cycle (gal/cycle and L/cycle), shall be measured in accordance to section 2(a) of appendix S of this subpart.” Similarly, 10 CFR 430.23(t) requires that “the maximum permissible water use allowed for showerheads, expressed in gallons and liters per minute (gpm and L/min), shall be measured in accordance to section 2(b) of appendix S of this subpart.”¹⁰

In the May 2022 NOPR, DOE noted that the language “*maximum permissible water use*” [emphasis added] in the aforementioned sections is incorrect, as the test procedures measure *water use* [emphasis added]. The term “maximum permissible water use” is instead descriptive of a conservation standard. 87 FR 32351, 32359.

Accordingly, DOE proposed to replace the language “the maximum permissible water use allowed” in 10 CFR 430.23(s) and 10 CFR 430.23(t) with “the water use.” *Id.* DOE explained that this amendment would clarify that the DOE test procedures measure water use, whereas the standards in 10 CFR 430.32(o) and (p) establish the maximum allowable water use for faucets and showerheads, respectively. *Id.*

¹⁰ DOE notes that section 2(a) and section 2(b) have been renumbered as section 2.1 and section 2.2, respectively, in this final rule.

Additionally, 10 CFR 430.23(s), 10 CFR 430.23(t), and appendix S state that water use should be expressed in “gallons and liters per minute (gpm and L/min).” In the May 2022 NOPR, DOE noted that this wording is unclear and could imply that manufacturers need to express results in both gpm and L/min, whereas manufacturers should instead express results in either gpm or L/min. 87 FR 32351, 32359. Accordingly, DOE proposed to replace the language “gallons and liters per minute” with “gallons or liters per minute.” *Id.*

ASA did not oppose replacing “maximum permissible water use allowed” with “water use” in 10 CFR 430.23(s) and (t) and replacing “gallons and liters per minute” with “gallons or liters per minute” in 10 CFR 430.23(s) and (t). (ASA, No. 13 at p. 3)

PMI commented that it agreed with DOE’s determination to update language for faucets and showerheads to state that water use is expressed in gallons or liters per minute. PMI also supported the language updates for faucets and showerheads to replace “maximum permissible water use allowed” with “water use.” (PMI, No. 16 at p. 8)

For the reasons discussed in the May 2022 NOPR and summarized in the preceding paragraphs, DOE is incorporating these edits into 10 CFR 430.23(s), 10 CFR 430.23(t), and appendix S as proposed in the May 2022 NOPR.

F. Test Procedure Costs

EPCA requires that test procedures proposed by DOE not be unduly burdensome to conduct. (42 U.S.C. 6293(b)(3)) In the May 2022 NOPR, DOE tentatively determined

that the proposed amendments would not impact testing costs and requested comment on this proposed determination. 87 FR 32351, 32359

In response, ASA commented that it was not aware of potential costs to industry and small business based on the information provided by DOE, on the assumption that DOE accepts the comments expressed by ASA. (ASA, No. 13 at p. 3)

PMI commented that manufacturers are already testing products using ASME A112.18.1-2018 and therefore updating the reference in DOE's test procedure would not affect testing. (PMI, No. 16 at p. 4) PMI expressed caution regarding the development of additional requirements outside of existing standards because they are typically not developed under the ANSI essential requirements, which are generally reviewed, discussed, and approved by a balanced committee of stakeholders. (PMI, No. 16 at p. 8)

In this final rule, DOE amends the test procedures for faucets and showerheads to reference the most recent update to the relevant industry standard, ASME 112.18.1-2018. In addition, DOE is also amending certain definitions to clarify the scope of the test procedure and adding additional specifications on equipment and instrumentation, measurement precision, and calculation of flow rate consistent with current industry practice. The adopted amendments are consistent with current industry standards and would not impact the measured values of water use for faucets and showerheads under appendix S. As supported by stakeholder comments summarized in the preceding paragraphs, DOE has determined that these adopted amendments will not impact testing costs already experienced by manufacturers or be unduly burdensome for manufacturers to conduct.

G. Effective and Compliance Dates

The effective date for the adopted test procedure amendment will be 30 days after publication of this final rule in the *Federal Register*. EPCA prescribes that all representations of energy efficiency and energy use, or in the case of faucets and showerheads, water use, including those made on marketing materials and product labels, must be made in accordance with an amended test procedure, beginning 180 days after publication of the final rule in the *Federal Register*. (42 U.S.C. 6293(c)(2)) EPCA provides an allowance for individual manufacturers to petition DOE for an extension of the 180-day period if the manufacturer may experience undue hardship in meeting the deadline. (42 U.S.C. 6293(c)(3)) To receive such an extension, petitions must be filed with DOE no later than 60 days before the end of the 180-day period and must detail how the manufacturer will experience undue hardship. (*Id.*)

IV. Procedural Issues and Regulatory Review

A. Review Under Executive Orders 12866, 13563, and 14094

Executive Order (“E.O.”)12866, “Regulatory Planning and Review,” 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 final 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 this final regulatory action does not constitute a “significant regulatory action” under section 3(f) of E.O. 12866. Accordingly, this action was not submitted to OIRA for review under E.O. 12866.

B. Review Under the Regulatory Flexibility Act

The Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) requires preparation of a final regulatory flexibility analysis (“FRFA”) for any final rule where the agency was

first required by law to publish a proposed rule for public comment, unless the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. As required by Executive Order 13272, “Proper Consideration of Small Entities in Agency Rulemaking,” 67 FR 53461 (August 16, 2002), DOE published procedures and policies on February 19, 2003 to ensure that the potential impacts of its rules on small entities are properly considered during the DOE rulemaking process. 68 FR 7990. DOE has made its procedures and policies available on the Office of the General Counsel’s website: energy.gov/gc/office-general-counsel. DOE reviewed this final rule under the provisions of the Regulatory Flexibility Act and the procedures and policies published on February 19, 2003.

In the May 2022 NOPR, DOE tentatively concluded that the impacts of the test procedure amendments contained in the NOPR would not have a “significant economic impact on a substantial number of small entities,” and that the preparation of an initial regulatory flexibility analysis (“IRFA”) was not warranted, and that DOE would transmit the certification and supporting statement of actual basis to the Chief Counsel for Advocacy of the small Business Administration for review. 87 FR 32351, 32361.

As stated, the amendments adopted in this final rule amend the test procedures for faucets and showerheads to reference the latest version of the industry standard, ASME A112.18.1-2018. In addition, DOE amends certain definitions to clarify the scope of the test procedure and add additional specifications on equipment and instrumentation, measurement precision, and calculation of flow rate consistent with current industry practice. DOE has determined that the adopted test procedure amendments would not

impact testing costs already experienced by any manufacturers, including small business manufacturers.

The amendments adopted in this final rule would not have significant economic impact on small businesses. The Small Business Administration (“SBA”) considers a business entity to be a small business if, together with its affiliates, it employs less than a threshold number of workers or earns less than the average annual receipts specified in 13 CFR part 121. The threshold values set forth in these regulation use size standards codes established by the North American Industry Classification System (“NAICS”) that are available at: www.sba.gov/document/support--table-size-standards. Plumbing equipment manufacturers are classified under NAICS 332913 “Plumbing Fixture Fitting and Trim Manufacturing,” and NAICS 327110 “Pottery, Ceramics, and Plumbing Fixture Manufacturing.” The SBA sets a threshold of 1,000 employees or fewer for an entity to be considered a small business within these categories.

For the same reasons discussed in the May 2022 NOPR, DOE concludes that the cost effects accruing from the final rule would not have a “significant economic impact on a substantial number of small entities,” and that the preparation of a FRFA is not warranted. DOE has submitted a certification and supporting statement of factual basis to the Chief Counsel for Advocacy of the Small Business Administration for review under 5 U.S.C. 605(b).

C. Review Under the Paperwork Reduction Act of 1995

Manufacturers of faucets and showerheads must certify to DOE that their products comply with any applicable energy conservation standards. To certify compliance, manufacturers must first obtain test data for their products according to the DOE test procedures, 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 faucets and showerheads. (*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.

DOE is not amending the certification or reporting requirements for faucets and showerheads in this final rule. Instead, DOE may consider proposals to amend the certification requirements and reporting for faucets and showerheads under a separate rulemaking regarding appliance and equipment certification. DOE will address changes to OMB Control Number 1910-1400 at that time, as necessary.

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

D. Review Under the National Environmental Policy Act of 1969

In this final rule, DOE establishes test procedure amendments that it expects will be used to develop and implement future energy conservation standards for faucets and showerheads. DOE has determined that this rule falls into a class of actions that are categorically excluded from review under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*) and DOE's implementing regulations at 10 CFR part 1021. Specifically, DOE has determined that adopting test procedures for measuring energy efficiency of consumer products and industrial equipment is consistent with activities identified in 10 CFR Part 1021, appendix A to Subpart D, A5 and A6. Accordingly, neither an environmental assessment nor an environmental impact statement is required.

E. Review Under Executive Order 13132

Executive Order 13132, "Federalism," 64 FR 43255 (August 4, 1999), imposes certain requirements on agencies formulating and implementing policies or regulations that preempt State law or that have Federalism implications. The Executive Order requires agencies to examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States and to carefully assess the necessity for such actions. The Executive Order also requires agencies to have an accountable process to ensure meaningful and timely input by State and local officials in the development of regulatory policies that have Federalism implications. On March 14, 2000, DOE published a statement of policy describing the intergovernmental consultation process it will follow in the development of such regulations. 65 FR 13735. DOE examined this final rule and determined that it will 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 final rule. States can petition DOE for exemption from such preemption to the extent, and based on criteria, set forth in EPCA. (42 U.S.C. 6297(d)) No further action is required by Executive Order 13132.

F. Review Under Executive Order 12988

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

extent permitted by law, this final rule meets the relevant standards of Executive Order 12988.

G. Review Under the Unfunded Mandates Reform Act of 1995

Title II of the Unfunded Mandates Reform Act of 1995 (“UMRA”) requires each Federal agency to assess the effects of Federal regulatory actions on State, local, and Tribal governments and the private sector. Pub. L. 104-4, sec. 201 (codified at 2 U.S.C. 1531). For a regulatory action resulting in a rule that may cause the expenditure by State, local, and Tribal governments, in the aggregate, or by the private sector of \$100 million or more in any one year (adjusted annually for inflation), section 202 of UMRA requires a Federal agency to publish a written statement that estimates the resulting costs, benefits, and other effects on the national economy. (2 U.S.C. 1532(a), (b)) The UMRA also requires a Federal agency to develop an effective process to permit timely input by elected officers of State, local, and Tribal governments on a proposed “significant intergovernmental mandate,” and requires an agency plan for giving notice and opportunity for timely input to potentially affected small governments before establishing any requirements that might significantly or uniquely affect small governments. On March 18, 1997, DOE published a statement of policy on its process for intergovernmental consultation under UMRA. 62 FR 12820; also available at energy.gov/gc/office-general-counsel. DOE examined this final rule according to UMRA and its statement of policy and determined that the rule contains neither an intergovernmental mandate, nor a mandate that may result in the expenditure of \$100 million or more in any year, so these requirements do not apply.

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

I. Review Under Executive Order 12630

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

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

Section 515 of the Treasury and General Government Appropriations Act, 2001 (44 U.S.C. 3516 note) provides for agencies to review most disseminations of information to the public under guidelines established by each agency pursuant to general guidelines issued by OMB. OMB’s guidelines were published at 67 FR 8452 (Feb. 22, 2002), and DOE’s guidelines were published at 67 FR 62446 (Oct. 7, 2002). 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 final rule under the OMB and

DOE guidelines and has concluded that it is consistent with applicable policies in those guidelines.

K. Review Under Executive Order 13211

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

This regulatory action is not a significant regulatory action under Executive Order 12866. Moreover, it would not have a significant adverse effect on the supply, distribution, or use of energy, nor has it been designated as a significant energy action by the Administrator of OIRA. Therefore, it is not a significant energy action, and, accordingly, DOE has not prepared a Statement of Energy Effects.

L. Review Under Section 32 of the Federal Energy Administration Act of 1974

Under section 301 of the Department of Energy Organization Act (Pub. L. 95–91; 42 U.S.C. 7101), DOE must comply with section 32 of the Federal Energy Administration Act of 1974, as amended by the Federal Energy Administration Authorization Act of 1977. (15 U.S.C. 788; “FEAA”) Section 32 essentially provides in relevant part that, where a proposed rule authorizes or requires use of commercial standards, the notice of proposed rulemaking must inform the public of the use and background of such standards. In addition, section 32(c) requires DOE to consult with the Attorney General and the Chairman of the Federal Trade Commission (“FTC”) concerning the impact of the commercial or industry standards on competition.

The modifications to the test procedure for faucets and showerheads adopted in this final rule incorporates testing methods contained in certain sections of the following commercial standards: ASME A112.18.1-2018. DOE has evaluated these standards and is unable to conclude whether it fully complies with the requirements of section 32(b) of the FEAA (*i.e.*, whether it was developed in a manner that fully provides for public participation, comment, and review.). DOE has consulted with both the Attorney General and the Chairman of the FTC about the impact on competition of using the methods contained in these standards and has received no comments objecting to their use.

M. Congressional Notification

As required by 5 U.S.C. 801, DOE will report to Congress on the promulgation of this rule before its effective date. The report will state that it has been determined that the rule is not a "major rule" as defined by 5 U.S.C. 804(2).

N. Description of Materials Incorporated by Reference

ASME A112.18.1-2018 is an industry-accepted test standard that measures water consumption for faucets and showerheads, and is applicable to products sold in North America. Specifically, the test procedure codified by this final rule references section 5.4 “Flow rate,” which includes section 5.4.1 “Supply fittings” and section 5.4.2 “Test procedure,” which outline the procedures for testing and measuring water consumption, specifications for test apparatus, and other general requirements.

ASME A112.18.1-2018 is reasonably available from American Society of Mechanical Engineers at 2 Park Avenue, New York, NY 10016–5990, or by visiting www.asme.org.

V. Approval of the Office of the Secretary

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

List of Subjects

10 CFR Part 430

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

Signing Authority

This document of the Department of Energy was signed on May 16, 2023, by Francisco Alejandro Moreno, Acting 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 May 16, 2023

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Francisco Alejandro Moreno
Acting Assistant Secretary for Energy
Efficiency and Renewable Energy
U.S. Department of Energy

For the reasons stated in the preamble, DOE amends part 430 of Chapter II of Title 10, 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. Section 430.2 is amended by:

a. Revising the definition for “Faucet”; and

b. Adding in alphabetical order, definitions for “Low-pressure water dispenser” and “Pot filler”.

The revision and additions read as follows:

§430.2 Definitions.

* * * * *

Faucet means a lavatory faucet, kitchen faucet, metering faucet, or replacement aerator for a lavatory or kitchen faucet, excluding low-pressure water dispensers and pot fillers.

* * * * *

Low-pressure water dispenser means a terminal fitting that dispenses drinking water at a pressure of 105 kPA (15 psi) or less.

* * * * *

Pot filler means a terminal fitting that can accommodate only a single supply water inlet, with an articulated arm or the equivalent that allows the product to reach to fill vessels

when in use and allows the product to be retracted when not in use.

* * * *

3. Section 430.3 is amended by revising paragraph (h)(1) to read as follows:

§430.3 Materials incorporated by reference.

* * * *

(h) * *

(1) ASME A112.18.1-2018/CSA B125.1-2018, (“ASME A112.18.1”), Plumbing supply fittings, CSA-published July 2018; IBR approved for appendix S to subpart B.

* * * *

4. Section 430.23 is amended by revising paragraphs (s) and (t) to read as follows:

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

* * * *

(s) *Faucets*. Measure the water use for lavatory faucets, lavatory replacement aerators, kitchen faucets, and kitchen replacement aerators, in gallons or liters per minute (gpm or L/min), in accordance to section 2.1 of appendix S of this subpart. Measure the water use for metering faucets, in gallons or liters per cycle (gal/cycle or L/cycle), in accordance to section 2.1 of appendix S of this subpart.

(t) *Showerheads*. Measure the water use for showerheads, in gallons or liters per minute (gpm or L/min), in accordance to section 2.2 of appendix S of this subpart.

* * * *

5. Appendix S to subpart B of part 430 is revised to read as follows:

Appendix S to Subpart B of Part 430 - Uniform Test Method for Measuring the Water Consumption of Faucets and Showerheads

Note: Manufacturers must use the results of testing under this appendix to determine compliance with the relevant standards for faucets and showerheads at §430.32(g)(o) and (p) as those standards appeared in January 1, 2023 edition of 10 CFR parts 200-499.

Specifically, before [INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*] representations must be based upon results generated either under this appendix as codified on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*] or under this appendix as it appeared in the 10 CFR parts 200-499 edition revised as of January 1, 2023. Any representations made on or after [INSERT DATE 180 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*] must be made based upon results generated using this appendix as codified on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

0. Incorporation by reference

In §430.3, DOE incorporated by reference the entire standard for ASME A112.18.1; however, only enumerated provisions of ASME A112.18.1 apply to this appendix, as follows. In cases in which there is a conflict, the language of the test procedure in this

appendix takes precedence over the referenced test standard. Treat precatory language in ASME A112.18.1 as mandatory.

0.1 ASME A112.18.1:

(a) Section 5.4 “Flow rate,” including Figure 3 but excluding Table 1 and excluding sections 5.4.2.3.1(a) and (c), 5.4.2.3.2(b) and (c), and 5.4.3, as specified in section 2.1 and 2.2 of this appendix;

(b) Section 5.4.2.2(c), as specified in section 3.1 of this appendix.

(c) Section 5.4.2.2(d), as specified in sections 2.2 and 3.2 of this appendix.

0.2 [Reserved]

1. *Scope*: This appendix covers the test requirements to measure the hydraulic performance of faucets and showerheads.

2. *Flow Capacity Requirements*

2.1. *Faucets* – Measure the water flow rate for faucets, in gallons per minute (gpm) or liters per minute (L/min), or gallons per cycle (gal/cycle) or liters per cycle (L/cycle), in accordance with the test requirements specified in section 5.4, Flow Rate, of ASME A112.18.1. Record measurements at the resolution of the test instrumentation. Round each calculation to the same number of significant digits as the previous step. Round the final water consumption value to one decimal place for non-metered faucets, or two decimal places for metered faucets.

2.2. *Showerheads* – Measure the water flow rate for showerheads, in gallons per minute (gpm) or liters per minute (L/min), in accordance with the test requirements specified in

section 5.4, Flow Rate, of ASME A112.18.1. Record measurements at the resolution of the test instrumentation. Round each calculation to the same number of significant digits as the previous step. Round the final water consumption value to one decimal place. If using the time/volume method of section 5.4.2.2(d), position the container to ensure it collects all water flowing from the showerhead, including any leakage from the ball joint.

3. General Instruction for Measuring Flow Rate

3.1. Using the Fluid Meter Method to Measure Flow Rate

When measuring flow rate upstream of a showerhead or faucet using a fluid meter (or equivalent device) as described in section 5.4.2.2(c) of ASME A112.18.1, ensure the fluid meter (or equivalent device) meets the following additional requirements. First, ensure the fluid meter is rated for the flow rate range of the product being tested. Second, when testing showerheads or non-metering faucets, ensure that the fluid meter has a resolution for flow rate of at least 0.1 gallons (0.4 liters) per minute. When testing a metering faucet, ensure that the fluid meter has a resolution for flow rate of at least 0.01 gallons (0.04 liters) per minute. Third, verify the fluid meter is calibrated in accordance with the manufacturer printed instructions.

3.2. Using the Time/Volume Method to Measure Flow Rate

There are several additional requirements when measuring flow rate downstream of a showerhead or faucet as described in section 5.4.2.2(d) of ASME A112.18.1 to measure flow rate. First, ensure the receiving container is large enough to contain all the water for a single test and has an opening size and/or a partial cover such that loss of water from

splashing is minimized. Second, conduct the time/volume test for at least one minute, with the time recorded via a stopwatch with at least 0.1-second resolution. Third, measure and record the temperature of the water using a thermocouple or other similar device either at the receiving container immediately after recording the mass of water, or at the water in the supply line anytime during the duration of the time/volume test. Fourth, measure the mass of water to a resolution of at least 0.01 lb. (0.005 kg) and normalize it to gallons based on the specific gravity of water at the recorded temperature.