



**Response to Public
Comments Received
on
February 2007 Draft WaterSense[®]
High-Efficiency Bathroom
Sink Faucet Specification**

October 1, 2007

Background

This document provides WaterSense's responses to public comments received on the February 8, 2007, Draft High-Efficiency Bathroom Sink Faucet Specification. The actual comments can be viewed at www.epa.gov/watersense/docs/faucet_comments508.pdf.

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I. General Specification Comments

Specification Name

- a. Several commenters recommended changing the name of the specification from “High-Efficiency **Bathroom Sink** Faucet Specification” to “High-Efficiency **Lavatory** Faucet Specification” for clarity, as this is the terminology used within the industry and in referenced standards to describe this category of product.

Response: WaterSense agrees with this recommendation and has made the appropriate changes throughout the specification.

Reference to Standards

- b. Several commenters recommended updating all references made to ASME A112.18.1 to the full title of the standard, ASME A112.18.1/CSA B125.1.

Response: WaterSense agrees with this comment and has updated all references to this standard throughout the specification and in the supporting documentation.

- c. One commenter recommended including a reference to NSF/ANSI Standard 61, Section 9. This standard addresses the requirements under Section 1417 of the Safe Drinking Water Act requiring all pipes and plumbing fittings or fixtures intended to dispense water for human consumption to be lead-free.

Response: WaterSense recognizes the need to clarify that any WaterSense labeled faucet or faucet accessory certified under this specification is also required to comply with NSF/ANSI 61, Section 9. While NSF/ANSI 61, Section 9 is already incorporated by reference into ASME A112.18.1/CSA 125.1, and is therefore part of this specification, WaterSense decided to make it clear that all WaterSense labeled faucets meet all applicable health and safety standards. Section 2.0 of this specification has been updated to include the appropriate reference to the NSF/ANSI standard. WaterSense has also incorporated by reference, in Section 7.0 – Definitions, the appropriate definitions found in NSF/ANSI Standard 61, Section 9.

Product Marking

- d. Several commenters suggested adding a new section to the specification to address flow rate marking on products and product packaging. Commenters recommended using the product and packaging marking requirements delineated in the *U.S. Code of Federal Regulations* (16 *CFR* Part 305—Rule Concerning Disclosures Regarding Energy Consumption and Water Use of Certain Home Appliances and Other Products Required Under the Energy Policy and Conservation Act [Appliance Labeling Rule], §305.11 – Labeling for Covered Products).

Response: WaterSense agrees that a requirement for proper marking of the flow rate on products and/or product packaging should be included in the specification. To address this comment, the following new section and language has been added to the specification:

“4.0 FLOW RATE MARKING

The product and/or the product packaging shall be marked in accordance with 16 CFR 305.11(f) with the maximum flow rate in gpm and L/min as determined through testing and compliance with this specification. Marking shall be in gpm and L/min in two-digit resolutions (e.g., 1.5 gpm [5.7 L/min]).”

- e. Another commenter requested that WaterSense require a WaterSense impression (either words or label) on the qualifying product itself to make post-installation identification easier.

Response: WaterSense decided not to require the actual certified products to carry a WaterSense impression. While WaterSense acknowledges that identifying labeled products after installation can be difficult, requiring manufacturers to imprint faucets, aerators, or other flow control devices would be burdensome and in cases of small components (e.g., aerators), impractical. The primary purpose of the WaterSense label is to help consumers identify and choose water-efficient products at the time of purchase. The appropriate labeling of product packaging will serve this purpose.

Long-Term Durability

- f. One commenter expressed concern that the long-term durability of water savings is not addressed by the specification. Specifically, the commenter cited a lack of criteria that addresses clogging of faucet aerators or other flow control devices and questioned how likely these devices are to be retained by consumers if they clog frequently and cannot be easily cleaned.

Response: WaterSense acknowledges that frequency of clogging and the ability of users to easily clean faucet accessories may have an impact on the long-term sustainability of water savings from these products. One way in which this issue is addressed by the specification is in allowing faucet accessories to be removable. When WaterSense posed the idea of requiring faucet accessories to be non-removable (to decrease the likelihood of vandalism or replacement with a higher flowing accessory), interested parties felt that including this type of provision would be needlessly design-restrictive and could result in high levels of user frustration and dissatisfaction. Interested parties overwhelmingly indicated that faucet accessories should be removable to facilitate cleaning and maintenance. To address long-term durability in terms of continued performance over the product's life, the ASME A112.18.1/CSA B125.1 *Plumbing Supply Fittings* standard, which is incorporated by reference in the specification, requires devices, accessories, or components without moving parts to be life-cycle tested. After 500,000 testing cycles, the faucet or faucet accessory shall continue to function as it did in the beginning of the test and shall not develop any defects that could adversely affect their functionality, serviceability, or appearance.

II. Comments on Section 1.0 – Scope and Objective

- a. One commenter felt that the scope of the specification should be narrowed to just cover faucet aerators, and should not include entire faucets. This commenter stated that manufacturers are very unlikely at this time to develop a faucet that meets the requirements of this specification; rather they will simply use qualifying aerators. The commenter believes that maintaining the specification's current scope is misleading and will result in reduced water savings for the nation. The commenter feels that a national aerator replacement program targeting the large number of inefficient lavatory aerators currently in use has the potential to yield larger water savings. The commenter also believes that homeowners are more likely to replace their inefficient aerators than to replace their entire faucet with a WaterSense labeled faucet. In proposing to narrow the scope of the specification to aerators only, the commenter does suggest crafting the specification so as to allow any faucets developed in the future that meet the requirements to qualify for use of the label.

Response: WaterSense recognizes that many manufacturers will choose to use WaterSense labeled aerators or other accessories on their faucets to achieve the specification requirements. In fact, WaterSense clarified that a lavatory faucet is considered to meet the flow rate requirement if equipped with a lavatory faucet accessory that meets the flow rate requirement. WaterSense, however, has decided not to limit the specification to encompass only faucet accessories. This would preclude a manufacturer from internally incorporating a flow rate control mechanism and would be unnecessarily design-restrictive in the approach to increasing the water efficiency of lavatory faucets. Since aerators and other flow control accessories are able to earn the WaterSense label individually, local, state, regional, and even national aerator replacement programs will still be possible. WaterSense does not believe that revising the specification to limit its scope will increase water savings and would be needlessly design-restrictive. WaterSense also intends to educate consumers regarding the value of installing a WaterSense labeled faucet accessory as a cost-effective retrofit option.

- b. One commenter recommended that the specification state that “needle spray” aerators (those that have no screen and emit water in a tight stream) not be allowed to qualify for the WaterSense label. The commenter has experienced performance issues related to splashing and splattering by 1.0 gpm needle spray aerator attachments.

Response: While WaterSense has heard complaints concerning faucet accessories using this type of spray pattern, WaterSense does not want to endorse or deprecate one technology over any other, particularly because some users may find this type of spray pattern satisfactory or indeed desirable for their application. In addition, WaterSense does not want to establish requirements that are unnecessarily design-restrictive. Rather, WaterSense feels it is up to manufacturers and consumers to decide which technologies to market and purchase. WaterSense may engage in a consumer education campaign related to product spray patterns to help consumers recognize there are a variety of products on the market.

- c. Another commenter suggested that WaterSense include a “quarter turn” performance standard in regards to the opening and turning-off of faucets. The concern was that lavatory faucets that require several rotations of the handle to turn off the water are less likely to be turned off by users when performing tasks such as brushing teeth or shaving. The commenter points out that lavatory faucet water consumption is a function of not only flow rate (i.e., gallons/minute) but also total time of usage. The commenter’s contention is that users will be more likely to turn off faucets during certain activities with a faucet that requires a quarter turn or less (or lowering the handle through an arc of less than 90 degrees for single lever faucets) than a faucet that requires multiple turns.

Response: While WaterSense encourages the manufacture of easy-to-shut off and ergonomically correct faucets, it is uncertain at this time whether including this type of requirement in the specification will result in any increase in water savings. Furthermore, the commenter suggests that a survey is necessary to determine whether a correlation with faucet type can be made with the likelihood of end users to shut-off the faucet when brushing teeth. Without conclusive data indicating that such functionality impacts user behavior and increases water savings, WaterSense has concluded that including this type of requirement in the specification at the time may be unnecessarily design-restrictive.

III. Comments on Section 2.0 – Water-Efficiency and Performance Criteria

Faucet Accessory Testing

- a. Several commenters remarked that the specification was too vague as to whether the entire faucet (including any flow control accessories) must be tested according to the ASME A112.18.1/CSA B125.1, or whether just the flow control accessory could be tested alone. The commenters pointed out that under the current testing protocols, just the accessory (e.g., aerator or laminar flow device) can be tested for compliance with the standard and any faucet to which it is subsequently attached is assumed to be in compliance with the required flow rate as well. The commenters questioned whether WaterSense intended to require all faucets and accessories to be tested together to qualify for use of the label.

Response: WaterSense does not intend to change the current testing protocols with this specification. It has always been WaterSense’s intention that either the faucet or flow control faucet accessory be able to earn the WaterSense label. It is also WaterSense’s intention to allow faucets that are manufactured and sold with WaterSense labeled accessories to qualify for and use the WaterSense label. WaterSense clarified the language in Section 2.0 to state that “A lavatory faucet is also considered to meet this flow rate requirement if equipped with a lavatory faucet accessory that meets this requirement.”

Establishing Maximum and Minimum Flow Rates

- b. Several commenters suggested clarifying that the 1.5 gpm flow rate at 60 pounds per square inch (psi) is the maximum allowable flow rate and that the 1.2 gpm flow rate at 20 psi is the minimum allowable flow rate.

Response: WaterSense has added the terms “maximum” and “minimum” in the revised specification to clarify that these are just maximum and minimum flow rates, and that flow rates in between are acceptable.

- c. Several commenters expressed concern that setting the maximum allowable flow rate at 1.5 gpm at 60 psi could actually result in an increase in water consumption in areas where 1.0 gpm aerators are already widely used (if homeowners were to replace their 1.0 gpm aerator with a WaterSense labeled aerator). One commenter also suggested that WaterSense did not provide adequate justification for the proposed water-efficiency levels in the specification (i.e., maximum and minimum flow rates). The commenter felt that these decisions for establishing flow rate requirements should be made based upon actual testing and user satisfaction data, not on opinion or a 20 percent improvement in water-efficiency guideline. The concern is that WaterSense might be setting the maximum and minimum flow rates too high when users might in fact be satisfied with significantly lower flow rates. The commenter also pointed out that there are several areas of the country where local water utilities have implemented aerator replacement programs using aerators with maximum flow rates below those specified in the draft specification, and that have had very high reported levels of user satisfaction. The commenter believes WaterSense’s objective should be to identify the lowest water use/flow rate that still obtains a 95 percent or greater consumer satisfaction.

Several other commenters agreed that consumer satisfaction research should determine the minimum flow rate requirements, but argued that this type of research takes considerable time to conduct. While this research is being conducted, they see no harm in adopting the currently proposed specification. If the research shows that allowing products that flow at lower flow rates are acceptable to the end user, the specification can always be revised accordingly.

Response: WaterSense considered data from the Seattle, Washington;¹ East Bay Municipal Utility District, California;² and Tampa, Florida³ retrofit studies and other factors in making the flow rate determinations, including examining product performance specification sheets for existing products, considering manufacturer and other interested party comments and recommendations, and our own technical expertise all within the context of the WaterSense program goals. In addition, WaterSense recognizes that

¹ Seattle Home Water Conservation Study: The Impacts of High Efficiency Plumbing Fixture Retrofits in Single-Family Homes, December 2000.

² Water Conservation Study: Evaluation of High Efficiency Indoor Plumbing Fixture Retrofits in Single-Family Homes in The East Bay Municipal Utility District Service Area, July 2003.

³ Tampa Water Department Residential Water Conservation Study: The Impacts of High Efficiency Plumbing Fixture Retrofits in Single-Family Homes, January 2004.

several water utilities across the country have distributed faucet aerators with flow rates less than 1.5 gpm and that have demonstrated very high levels of user satisfaction. In response, WaterSense has maintained the maximum flow rate at 1.5 gpm, but has lowered the minimum flow rate from 1.2 gpm to 0.8 gpm in order to allow faucet aerators with maximum flow rates less than 1.5 gpm to meet the specification and qualify for the WaterSense label.

- d. Numerous commenters made recommendations on changes to the proposed minimum flow rate of 1.2 gpm at 20 psi. Most commenters recommended lowering the minimum flow rate and a few suggested having no minimum flow rate at all.

Specific suggestions for lowered minimums included 1.0 gpm at 20 psi, 1.1 gpm at 20 psi, and 0.8 gpm at 30 psi. The commenters that recommend 1.0 gpm and 1.1 gpm at 20 psi were concerned with user satisfaction issues when fixed orifice flow restrictors are used at low water pressures. Besides the reduction in flow due to low water pressures, they also cited the further reduction in flow rates that result from attaching any faucet accessory (e.g., aerators) to faucets due to the upstream restriction of the faucet. Setting the minimum at either 1.0 gpm or 1.1 gpm at 20 psi essentially requires manufacturers to use pressure compensating faucet accessories. They felt this would help ensure a high level of user satisfaction.

One commenter recommended that the minimum flow rate be set at 0.8 gpm at 30 psi. This would allow for non-pressure compensating devices and provides a lower minimum value that would allow for lower maximum flow rates.

A few commenters suggested using a flow rate differential (instead of establishing a single minimum flow rate) from the faucet or accessory's designed flow rate to establish allowable minimum flow rates (20 percent at 20 psi was recommended). This means that a faucet or accessory designed to flow at 1.5 gpm at 60 psi would be allowed to flow at 1.2 gpm at 20 psi. Similarly, this would mean the minimum allowable flow rate for a 1.0 gpm fixture fitting at 60 psi would be 0.8 gpm at 20 psi, and 0.4 gpm at 20 psi for a fixture fitting designed to flow at 0.5 gpm at 60 psi. The commenters felt that a benefit of this approach would be to address the concern many other commenters had expressed regarding utility sponsored projects that give away 1.0 gpm or 0.5 gpm fixtures, which might not otherwise qualify for the WaterSense label.

The commenters advocating no minimum flow rate at all want to also maximize water savings by allowing faucets with flow rates lower than 1.5 gpm at 60 psi (e.g., 1.0 gpm or 0.5 gpm) to be used when appropriate conditions exist. Examples provided by these commenters included 0.5 gpm fixture fittings in guest room bathrooms of hotels and hospitals with hot water recirculation systems and good water pressure. Some commenters also wanted utilities to be able to continue distributing 1.0 gpm aerators, or even 0.5 gpm aerators, as part of their water conservation initiatives and for these products to earn the WaterSense label.

Response: WaterSense strongly believes that there needs to be a minimum allowable flow rate to ensure performance and user satisfaction. Based upon the comments

received; water savings and user satisfaction data generated by the Seattle, Washington; Tampa, Florida; and East Bay Municipal Utility District retrofit studies that used 1.0 and 1.5 gpm maximum flow aerators; and product flow curves for fixed orifice and pressure compensating aerators and laminar flow devices, WaterSense has revised the minimum allowable flow rate from 1.2 gpm at 20 psi to 0.8 gpm at 20 psi.

WaterSense believes that this approach allows for the greatest degree of design freedom for manufacturers and helps ensure a high level of performance and user satisfaction. With this minimum flow rate, 1.5 gpm at 60 psi fixed orifice faucet accessories and pressure compensating faucet accessories with maximum flow rates as low as 1.0 gpm at 60 psi will be able to qualify for the WaterSense label (according to currently available product specifications and flow curves). This approach ensures that utility programs that are providing 1.0 gpm aerators to their consumers will be able to use WaterSense labeled products to continue to achieve substantial water savings.

WaterSense decided not to adopt the differential flow rate approach. Regardless of the differential, WaterSense felt it would still need to establish some absolute minimum flow rate in order to avoid extremely low flow rates, particularly in low water pressure settings, that are likely to cause user dissatisfaction. In addition, there are no conclusive data correlating minimum flow rates to user satisfaction and to the ability of the lavatory faucet to perform its intended functions. WaterSense has decided to err on the side of caution and has set the minimum allowable flow rate at a level where performance and user satisfaction will be maintained. If in the future, conclusive data become available that demonstrates lower flow rates are acceptable to users, then WaterSense will revisit this specification and make any appropriate revisions.

- e. Several commenters lobbied for a provision in the specification allowing lavatory faucets with flow rates less than the minimum allowable flow rate (e.g., 0.5 gpm at 60 psi) to qualify for the WaterSense label if the faucets or faucet accessories are employed specifically in commercial settings with adequate water pressure and where hot water recirculating systems are used. The commenters argued that many new “green” and LEED certified buildings are using such systems and it would be beneficial to facility owners if such systems were recognized by WaterSense.

Response: Adding language to this specification to allow the use of fixtures with flow rates below the allowable minimum only in certain situations, provided hot water recirculating systems are used or facility water pressure is above some minimum level, goes far beyond what can be tested and certified by the licensed certifying bodies under the current WaterSense certification scheme. Enforcement of the end use of a product would be extremely difficult and is currently beyond the capabilities of the WaterSense program.

As stated in the specification and the accompanying supporting statement, this specification does not apply to faucets intended for public use, which are subject to a maximum flow rate of 0.5 gpm at 60 psi as specified in the ASME A112.18.1/CSA B125.1 standard. If WaterSense decides to address water efficiency and performance for these types of faucets, it will do so under a separate specification at a later date. To

provide further clarification, the scope of the specification has been revised to indicate that the specification applies only to lavatory faucets in private use, such as in residences, and private restrooms in hotels and hospitals. Metering faucets, lavatory faucets in public use, and residential kitchen faucets are not covered by this specification. Furthermore, WaterSense incorporated definitions for public and private use from the National Standards Plumbing Code. These are as follows:

“Private Use – Applies to fixtures for the private and restricted use of one or more individuals in dwelling units, including hotel guest rooms and hospital rooms, and other facilities that are not intended for public use.”

“Public Use – Applies to fixtures for the unrestricted use of more than one individual (including employees) in assembly occupancies, business occupancies, public buildings, transportation facilities, schools and other educational facilities, office buildings, restaurants, bars, other food service facilities, mercantile facilities, manufacturing facilities, military facilities, and other facilities that are not intended for private use.”

Flow Rate Tolerance

- f. Several commenters recommended deleting the +/- 0.1 gpm variance/tolerance proposed in the draft specification and suggested replacing it with the statistical measurement technique required under U.S. Department of Energy (DOE) regulations relating to the Energy Policy Act of 1992 (found at 10 *CFR* Part 430). Commenters felt the proposed variance was arbitrary and potentially at odds with DOE’s regulations.

Response: WaterSense agrees with the commenters recommendations and has replaced the proposed flow variance/tolerance language with a reference to the appropriate DOE regulatory requirements.

IV. Comments on Section 5.0 – Definitions

(Note: Due to the addition of new sections to the specification, this section has been renumbered as Section 7.0.)

- a. Several commenters suggested that the definition for “certified flow rate” be either 1) modified so as not to contain performance requirements, 2) replaced with a definition of “maximum flow rate” for clarity, or 3) deleted.

Response: With the changes made to the variance/tolerance requirement in Section 2.0 – Water Efficiency and Performance Criteria (see previous comment and response “f.” in Section III of this document), the term “certified flow rate” has been removed and no longer requires defining.

V. Comments on Supporting Documentation

- a. One commenter recommended improving the retail cost and savings analyses provided in the *WaterSense High-Efficiency Bathroom Sink Faucet Specification Supporting Statement* by correcting the assumed retail cost of a WaterSense labeled aerator from \$10 each to no more than \$4 each. The commenter also suggested using the incremental cost between a new WaterSense aerator and a standard replacement aerator in determining the cost effectiveness of these products for consumers. The commenter argues that in many cases the consumer is purchasing a new aerator anyway, so the true cost of the WaterSense aerator is the incremental cost above the price of the standard aerator. The commenter also recommended including the imbedded value of energy in the water supply and wastewater treatment in the cost calculations. The commenter felt that this represents a national savings that needs to be considered.

Response: WaterSense agrees with the recommendation to use a lower retail cost for WaterSense labeled faucet accessories in determining their cost effectiveness and payback period. This change has been made in the revised supporting statement released with the final specification.

WaterSense decided not use the incremental cost of a WaterSense labeled aerator over a standard aerator in its cost effectiveness calculations. In these examples, WaterSense wants to demonstrate the water, energy, and cost saving benefits of using labeled high-efficiency products to promote their use and acceptance. WaterSense feels that by demonstrating the potential savings and quick payback period even when paying full retail cost to replace a functioning, less efficient aerator with a WaterSense labeled product makes a stronger case for their universal use. This is consistent with the approach WaterSense used for calculating the estimated water savings for the Tank-Type High-Efficiency Toilet Specification.

WaterSense is primarily targeting residential homeowners for its education and outreach campaign. For the purpose of the information contained in the supporting statement, WaterSense does not feel that it is necessary to include the national energy, water supply, and wastewater treatment cost savings from reduced water consumption. WaterSense agrees that these national savings are significant and a desirable result of increasing the efficiency of lavatory faucets, and may provide this information in a different format for a different target audience.