Response to Public Comments Received on February 2013 *WaterSense® Draft Specification for Commercial Pre-Rinse Spray Valves*

September 19, 2013

Background

This document provides WaterSense's responses to public comments received on the *WaterSense Draft Specification for Commercial Pre-Rinse Spray Valves*. For purposes of this document, the comments are summarized. The verbatim comments can be viewed in their entirety at www.epa.gov/watersense/partners/prsv_background.html.

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I. Comments on Section 1.0: Scope and Objective

WaterSense received no comments on the specification's Scope and Objective section.

II. Comments on Section 2.0: General Requirements

Flow Rate Test Method

a. One commenter noted that Section 2.1 of the specification omits the flow rate test exception. The commenter recommended changing the language in Section 2.1 of the specification as follows:

"The pre-rinse spray valve shall conform to applicable requirements in *ASME A112.18.1/CSA B125.1 Plumbing Supply Fittings*, with the exception of the life cycle test requirements described in Section 4.2 below and the flow rate test in 3.0 below."

Response: WaterSense agrees with this comment and has updated the specification to reflect this change (see Section 2.1).

During the specification development process, WaterSense collaborated with the American Society of Mechanical Engineers (ASME)/Canadian Standards Association (CSA) Joint Harmonization Task Force Project Team FT-07-11 (hereafter referred to as "project team"). The project team conducted round-robin testing and found that the catch-and-weigh method for measuring a pre-rinse spray valve's (PRSV's) flow rate was more accurate than measuring the flow rate using a flow meter. *ASME A112.18.1/CSA B125.1 Plumbing Supply Fittings* allows flow rate testing using water meters or the catch-and-weigh method, whereas *ASTM F2324 Standard Test Method for Prerinse Spray Valves* only allows for use of the catch-and-weigh method. For this reason, the WaterSense specification specifies *ASTM F2324* for flow rate testing. It is now clear in the specification that WaterSense is making an exception to require flow rate testing in accordance with *ASTM F2324* rather than *ASME A112.18.1/CSA B125.1*.

III. Comments on Section 3.0: Water Efficiency Requirements

Maximum Flow Rate Requirement

a. One commenter expressed support of the proposed maximum flow rate requirement of 1.28 gallons per minute (gpm), stating that it is 20 percent less than the Energy Policy Act (EPAct) of 2005 standard of 1.6 gpm.

Response: WaterSense thanks the commenter for supporting the maximum flow rate requirement in the specification. Consistent with the WaterSense program's

goals, labeled commercial PRSVs will be at least 20 percent more efficient than standard models on the market.

IV. Comments on Section 4.0: Performance Requirements

Minimum Spray Force Requirement

a. Thirteen commenters urged WaterSense to establish a new product category and efficiency and performance provisions for ultra low-flow PRSVs. The commenters suggested defining this category of PRSVs as those with a maximum flow rate of 0.8 gallons per minute (gpm) at 60 pounds per square inch (psi) and a minimum spray force of 4 ounces.

   Eleven of these commenters noted that by eliminating ultra low-flow PRSVs from the WaterSense specification, WaterSense could be potentially increasing current water and energy consumption by 25 to 50 percent and would be eliminating the range of choices currently available on the PRSV market. The commenters noted that they regularly sell ultra low-flow PRSVs to some commercial kitchens because not every application requires a higher flow rate and higher spray force. Further, the commenters stated that the extensive testing done in their industry provides measurable data regarding performance, sanitation, employee safety and satisfaction, and water and energy usage of specific spray valves.

   One commenter noted that the draft specification does not account for ultra low-flow applications where lower rates are needed for specific niche markets. In jurisdictions where the WaterSense label is promulgated into law, the WaterSense draft specification for PRSVs might inadvertently ban these ultra low-flow products. This commenter pointed out that setting a 0.8 gpm maximum for ultra low-flow PRSVs would yield a minimum of 50 percent flow rate reduction from the federal 1.6 gpm requirement.

   One commenter stated that its customers are highly satisfied with its PRSVs offered, and they have come to depend on both ultra low-flow and low-flow PRSVs. This commenter noted that not including provisions for ultra low-flow designs with lower spray forces in the WaterSense specification will severely impede the end users' ability to choose products that best suit their specific needs and will also have a negative impact on water and energy conservation efforts.

   Response: WaterSense agrees that some ultra low-flow PRSVs are satisfactory to end users and did not intend to exclude lower-flowing models from the specification. To address these comments, WaterSense has modified the specification to require a minimum spray force of 4 ounces-force (ozf).

After reconsidering the user satisfaction and spray force data, considering the public comments, and discussing this change with the project team, WaterSense has determined that a minimum spray force of 4.0 ozf represents an important threshold for positive user satisfaction and will result in more significant water savings for food service establishments and the WaterSense program. Further, commenters supporting the change to 4.0 ozf represent a wide selection of the PRSV industry (e.g., restaurant distributors, manufacturers, trade associations), and the commenters have demonstrated that there is user satisfaction among valves with a minimum force of 4.0 ozf.

However, WaterSense is not modifying the specification to include two distinct categories of PRSVs, as the commenters suggested. Instead, WaterSense will maintain a minimum threshold level of performance that is now able to accommodate ultra low-flow PRSVs that are suitable for a variety of end uses and applications. In this manner, the WaterSense label will continue to provide a simple, single-tiered symbol to help purchasers recognize products that are water-efficient and perform as well or better than standard models on the market. To further help purchasers choose products that best meet their needs for a specific application, WaterSense requires that PRSV packaging and/or product literature be marked with the maximum rated flow rate and the tested spray force. WaterSense's intent is to label PRSVs based on a minimum level of performance, not put a minimum bound on product flow rate.

Including Spray Force as a Performance Criterion

b. One commenter suggested that WaterSense remove the minimum spray force requirement from the specification. The commenter stated that WaterSense's rationale that "several users indicated low pressure (i.e., spray force) as a reason for dissatisfaction" during its field study is not an appropriate justification for adopting spray force as a performance criterion because the sample size of the study was too small. In addition, the commenter noted that the marketplace is capable of distinguishing acceptable performance criteria among different available PRSV models on its own. The commenter noted that spray force only has a 27 percent correlation to user satisfaction, which is not high enough to determine that spray force is an appropriate performance criterion. The commenter urged WaterSense to only include a maximum flow rate requirement, or find another performance test with a minimum of 60 percent positive correlation to user satisfaction.

Response: WaterSense thanks the commenter for this suggestion but has not removed the minimum spray force requirement from the specification. Consistent with the WaterSense program's goals, the label will continue to provide a symbol of both product efficiency and performance. Performance is critical for ensuring the integrity of the WaterSense brand and the longevity of water savings.

WaterSense recognizes that the field study was limited, but in some cases, several users interviewed expressed dissatisfaction with some of the PRSVs

tested. This feedback indicates that there is a need for a mechanism in the market to differentiate products based on performance.

In addition, manufacturers, restaurant distributors, utilities offering product rebates, and other trade associations commented on the draft specification and indicated support for including spray force as the performance criteria for PRSVs to earn the label. In addition, the project team and ASTM support the inclusion of spray force as a performance criterion; in fact, ASTM recently revised the *ASTM F2324 Standard Test Method for Prerinse Spray Valves* to include the new spray force test. While WaterSense acknowledges that the correlation between user satisfaction and spray force might be low, it was an order of magnitude higher than the correlation between user satisfaction and the former tomato paste cleanability performance test (required under the previous version of *ASTM F2324*). Further, WaterSense is adjusting the minimum spray force requirement to allow a wider variety of products, which have demonstrated satisfactory performance to end users, to earn the label.

Spray Force Units

c. One commenter noted that the correct nomenclature for force is ounces-force (ozf) and grams-force (gramf) or Newton (N). This change would also provide better agreement with the two-digit resolution requirement in Section 5.1.5. The commenter suggested changing Section 4.1.1 as follows:

"The minimum spray force shall not be less than 5.0 ounce~~s~~ -force (ozf) (142 grams-force (gramf))."

OR

"The minimum spray force shall not be less than 5.0 ounce~~s~~ -force (ozf) (142 grams 1.4 Newton (1.4 N)))."

Response: WaterSense agrees that the units used for spray force should be clarified in the specification. As such, WaterSense changed "ounces" to "ounces-force" and "grams" to "grams-force."

Life Cycle Testing Requirement

d. One commenter suggested only requiring PRSVs to perform for 150,000 cycles. This commenter noted that WaterSense's justification for requiring 500,000 cycles and the underlying assumptions are arbitrary. The commenter commented that *ASME/CSA A112.18.1/CSA B125.1* has required 150,000 cycles for years and inquired whether there is field data to support the change to 500,000 cycles. The commenter also noted that the requirements in this specification are minimum performance requirements. The commenter indicated that EPA's field study showed a high rate of breakage but noted that there was no confirmation that the PRSVs tested were certified to the ASME/CSA standard. The

commenter also noted that the project team agreed that the increased life cycle requirement would only apply to high-efficiency PRSVs.

Another commenter suggested removing the life cycle testing requirements altogether. This commenter noted that there was minimal discussion about the life cycle testing requirement in the project team and that the requirement was suggested by only one manufacturer. The commenter also noted that there was no testing done to ascertain how PRSVs would stand up to a requirement of 500,000 cycles, and there was no correlation among life cycle testing and user satisfaction.

Response: WaterSense maintains its position that the specification needs to require a higher level of life cycle testing than is currently required in *ASME/CSA A112.18.1/CSA B125.1*. Of the 14 PRSV models tested during EPA's field study, at least one sample of five of those models leaked or otherwise malfunctioned during its three-week testing period. Of those five models, two were certified to meet the life cycle requirement of 150,000 cycles in *ASME/CSA A112.18.1/CSA B125.1*. As a result, WaterSense determined that a more stringent requirement for life cycle testing is necessary to ensure product duration and the longevity of water and energy savings.

However, after reviewing the concerns raised during the public comment period and discussing the feasibility and basis for this requirement further with the project team, WaterSense and the project team determined that the life cycle testing requirement should be 250,000 cycles in the final specification. The 250,000 cycles represents a 67 percent increase over the current life cycle testing for standard PRSVs and puts the requirements in line with some manually operated fittings. In addition, EPA is clarifying that the life cycle testing requirements in the specification only apply to products under consideration for the label.

V. Comments on Section 5.0: Marking

Flow Rate Override

a. One commenter suggested adding the following provision to control flow rate override:

"High-efficiency commercial pre-rinse spray valves shall not be packaged, marked, or provided with instructions directing the user to an alternative water-use setting that would override the maximum flow rate specified in Section 5.1.4. Instructions related to the maintenance of the devices, including changing or cleaning pre-rinse spray valve components, shall direct the user on how to return the device to its intended maximum flow rate."

Response: The specification already addresses flow rate override through provisions in Section 2.3 of the specification.

Spray Force Units

b. One commenter suggested providing the spray force units in Newtons for better agreement with the two-digit resolution requirement for marking the minimum spray force in Section 5.1.5. Throughout the specification, metric conversions are used, and the correct nomenclature for force is ounces-force (ozf) and grams-force (gramf) or Newton (N). The commenter suggested the following change to Section 5.1.5:

"The spray force marking shall be in ounces force (ozf) and Newton in two-digit resolution (e.g., 5.0 ~~ounces~~ ozf (1.4 N))."

Response: WaterSense discussed the appropriate units for spray force with the project team and determined that spray force should be marked in ounces-force and grams-force, to ensure an appropriate conversion for those using the metric system (see Section 5.1.5).

VI. Comments on Appendix A: Draft *ASTM F2324 Standard Test Method for Prerinse Spray Valves*

Not Accepting Comments on the Draft Revised *ASTM F2324* Test Method

a. One commenter noted that it was surprising that WaterSense was not taking comments on the draft *ASTM F2324* test method revisions and questioned if WaterSense would accept whatever ASTM finalized. The commenter noted that WaterSense should want to comment on the ASTM draft to ensure the final document is acceptable for the specification's intent.

Response: WaterSense worked closely with ASTM through the development of the *F2324* test method and finds the final test method acceptable for its purposes. Since the draft specification was released, the *ASTM F2324* revisions have been finalized and the test method is now fully incorporated by reference into the final specification. The test method was developed through a consensus-based process that allowed for adequate public consideration and input. Further, WaterSense urged its stakeholders to comment directly on the test method through the ASTM process.

VII. General Comments on the Specification

General Specification Support

a. One commenter expressed its support for the draft specification, noting that it offers a solid foundation for energy efficiency programs. The commenter noted that qualifying PRSVs would result in significant energy and water savings at low or no extra cost and are expected to perform similar to non-qualifying, higher-flowing units. Testing can be done in a consistent and repeatable manner, and

test results for a subset of the criteria indicate that several models made by multiple manufacturers should be able to meet the specification criteria. The commenter stated it is aware of several of its member organizations that plan to consider adopting the specification as the basis for program promotion once it is finalized.

Response: WaterSense thanks the commenter for these comments and its support of the WaterSense program, specification development process, and specification requirements. The final specification for commercial PRSVs is a reflection of the hard work and dedication of a variety of stakeholders who provided invaluable input throughout the process. In addition, WaterSense looks forward to working with the commercial food service sector, energy and water utilities, and other key stakeholders to help transform the PRSV market and inform purchasing decisions that will result in significant water and energy savings.

b. One commenter expressed dissatisfaction with WaterSense's specification development process. The commenter was concerned about the transparency of the specification development process, the scientific methods used to support field study data collection, EPA's collection of industry input, and the validity of the assumptions and calculations.

Response: WaterSense followed its established specification development process to develop the commercial PRSV specification. The specification was developed over a four-year period, during which WaterSense worked through the ASME/CSA project team process (open to any interested party); coordinated with ASTM; and collaborated with a variety of other interested stakeholders, including manufacturers, utilities, testing laboratories, efficiency programs, purchasers and specifiers, standards organizations, and government agencies.

In July 2009, WaterSense issued a Notice of Intent (NOI) outlining its outstanding questions about the PRSV product category and requested industry and stakeholder input on these outstanding issues. From late 2009 through 2012, WaterSense collected data and further researched PRSVs. During this time, WaterSense also conducted a field study to inform the specification development process. The study scope for that research was reviewed by the project team prior to field data collection. EPA shared all of its data and discussed its conclusions with the project team prior to publishing the research report.

Following the field study, WaterSense worked with the project team and ASTM to develop the specification criteria. The project team independently collected data on flow rate and spray force to ensure test methods were repeatable and reproducible.

Once the draft specification was released in February 2013, EPA provided a 60-day public comment period and held a public meeting to gather input and ensure transparency.

VIII. Comments on the Specification Supporting Documentation

Estimated Number of Pre-Rinse Spray Valves Nationwide

a. One commenter urged WaterSense to increase its estimate of PRSVs in the United States to ensure that the national water savings estimate is more accurate. The commenter noted that the California Urban Water Conservation Council estimates there are 175,000 PRSVs in California, which can be extrapolated to 1.5 million PRSVs nationally. The commenter noted that if WaterSense uses the estimate from the National Restaurant Association of 970,000 food service establishments, WaterSense should assume 1.5 PRSVs per establishment.

   Response: WaterSense agrees that it might have underestimated the size of the PRSV market. WaterSense has changed its assumption of the number of PRSVs per establishment to 1.5 and has updated calculations in the supporting statement accordingly. This change is supported by EPA's observations during the field study that several establishments had more than one spray valve. The size of the market and estimated national water and energy savings now more accurately represent the savings potential.

Estimated Annual Sales

b. One commenter noted that WaterSense's estimate of five years for a PRSV's useful life is too long. The commenter noted that PRSVs only last one to one and a half years. The commenter requested that WaterSense update the estimate for annual sales of new PRSVs per year in its supporting statement based on a useful life of one to one and a half years.

   Response: WaterSense is confident in its estimate of five years for a PRSV's useful life. The five-year useful life was determined based on conversations with manufacturers, input from the project team, input from the Plumbing Manufacturers International (PMI), and other research conducted on this product category. The assumption is also supported by the field study conducted in early 2010, in which EPA found several existing PRSVs that were non-EPAct compliant (approximately four years after EPAct requirements went into effect). In addition, a five-year useful life provides a conservative estimate of annual sales and potential national water and energy savings.

Average Use Time per Day Used in Life Cycle, Water, and Energy Savings Calculations

c. One commenter suggested that a use time of three hours per day is a more appropriate estimate of daily use time than WaterSense's estimate of 64 minutes per day. The commenter noted that "manufacturer input" upon which

WaterSense's estimate is based is not an appropriate way to establish average daily use time. The commenter suggested getting input from restaurant operators and restaurant kitchen equipment service companies.

Response: WaterSense is confident in its estimate that PRSVs are used 64 minutes per day, based not on manufacturer input but rather on a weighted average use time calculated from seven field studies, including EPA's own field study. These studies include:

- Tso, Bing, P.E. and John Koeller, P.E. December 1, 2005. *Pre-Rinse Spray Valve Programs: How Are They Really Doing?* Page 8. The report references PRSV use-time results from five studies, including:
  - California Urban Water Conservation Council's Phase 1 and Phase 2 programs
  - Veritec Consulting's Region of Waterloo study
  - Pilot test conducted by Seattle Public Utilities
  - Pilot test done by Puget Sound Energy
- Veritec Consulting, Inc. December 2005. *City of Calgary Pre-Rinse Spray Valve Pilot Study Final Report*.
- EPA's WaterSense program. March 31, 2011. *Pre-Rinse Spray Valves Field Study Report*. Appendix D.

User Satisfaction Data

d. One commenter expressed concern about WaterSense's draft supporting statement that said "users were generally less satisfied with PRSVs that flow at less than 1.0 gpm." The commenter indicated that this statement is false, since some valves with flow rates less than 1.0 gpm are satisfactory to users. Further, the commenter stated that manufacturers have the capability to design PRSVs with flow rates less than 1.0 gpm that perform well.

Response: WaterSense has clarified in its supporting statement that the field study indicated there was correlation between flow rate and user satisfaction, not that users were generally less satisfied with PRSVs with flow rates less than 1.0 gpm. In addition, WaterSense is acknowledging the merit of this comment through the change to the minimum spray force requirement to 4.0 ozf. With this change, WaterSense recognizes that lower-flowing PRSVs have a valuable place in the market and that manufacturers have the ability to market PRSVs with flow rates less than 1.0 gpm that can achieve high user satisfaction. WaterSense continues to provide flexibility and encourage manufacturers to make and advertise products that are even more efficient or higher performing than the thresholds established by the specification.

Potential Savings and Cost-Effectiveness

e. One commenter noted that WaterSense grossly underestimates savings. The commenter indicated that WaterSense should account for the total amount of water and energy it takes to produce a gallon at the end-use spigot, rather than

only accounting for the water and energy savings at the end-use spigot. This includes losses incurred and energy used in collection, transportation, treatment, and distribution of water, as well as the water used at the end-use spigot. The commenter noted that these savings could be two to 10 times the savings calculated from switching from a 1.6 gpm to a 1.28 gpm PRSV at the end use only. The commenter also noted that WaterSense should account for the cost of sewage in its cost-effectiveness calculations.

Response: WaterSense recognizes that there might be ancillary benefits to the program, including the reduction of water and energy required to provide water and treat wastewater. However, the water and energy savings presented in the supporting statement are intended to provide food service establishments with information to inform a purchasing decision and as a result, estimate the direct benefits they can realize.

WaterSense's cost-savings estimates do include avoided wastewater costs for these food service establishments. WaterSense uses the average price of water supply and wastewater treatment (i.e., $9.30 per 1,000 gallons) in its cost-effectiveness calculations, which are documented in Appendix A of the *WaterSense Specification for Pre-Rinse Spray Valves Supporting Statement*.

f. One commenter noted that calculating water savings by assuming all PRSVs are 1.6 gpm models underestimates the true savings. The commenter indicated that EPA's field study demonstrates an average water use of more than 2 gpm from existing PRSVs tested and suggested WaterSense use that number as the standard flow rate of existing PRSVs.

Response: WaterSense uses 1.6 gpm as the standard PRSV flow rate to provide conservative water, energy, and cost-savings estimates to those making purchasing decisions. Since 1.6 gpm is the maximum flow rate required by EPAct of 2005 (i.e., 1.6 gpm is the current fixture standard), it is the maximum flow rate of products currently allowed for sale on the market.

ENERGY STAR® Support

g. One commenter indicated that it seems that ENERGY STAR does not support WaterSense's methodology in arriving at the performance criteria included in the specification. The commenter asked that WaterSense fully disclose the opinions of ENERGY STAR about the WaterSense process, conclusions, and recommendations for PRSVs.

Response: WaterSense and ENERGY STAR have coordinated at each stage of the specification development process, and ENERGY STAR has expressed support for all of the specification's criteria. Upon the release of the draft specification, WaterSense and ENERGY STAR made a collaborative decision that PRSVs will only be eligible for the WaterSense label. However, ENERGY STAR will continue to play an active role in promoting the WaterSense labeled

PRSVs, because they offer significant water and energy savings. This decision provides a streamlined process and ensures that undue burden is not placed upon manufacturers seeking to label their products, since the WaterSense and ENERGY STAR have slightly different certification schemes and requirements.