



WaterSense® Spray Sprinkler Bodies Draft Specification Public Webinar Summary

January 18, 2017, 1:00 to 3:00 p.m. Eastern

Webinar Participants

Russell Ackerman, City of Santa Monica (California)
Brent Barkley, Rain Bird Corporation
Linda Barrera, California Energy Commission (CEC)
Erica Bauman, K-Rain Manufacturing
Veronica Blette, U.S. Environmental Protection Agency (EPA)
Adam Carpenter, American Water Works Association
LuAnne Chorkaluk, Spartan Distributors, Inc.
Michael Dukes, University of Florida
Rogelio Hernandez, Broward County (Florida) Environmental Planning and Community Resilience
Natalie Jones, Tacoma Public Utilities (Washington)
Mick Jost, University of Minnesota Twin Cities
Joanna Kind, Eastern Research Group, Inc. (ERG)
Susan Lee, Natural Resources Defense Council
Jessica Lopez, CEC
Daniel Martin, Coachella Valley (California) Water District
Cary McElhinney, EPA
Brent Mecham, Irrigation Association
Qiaoli Meng, ICC Evaluation Service
Akshay Mishra, American National Standards Institute (ANSI)
Robert Pickering, ERG
Ed Pike, Energy Solutions
Judith Ranton, Portland Water Bureau (Oregon)
Robert Reaves, City of Oklahoma City (Oklahoma)
Sean Steffensen, CEC
Daniela Urigwe, Energy Solutions
Tim York, City of Aurora (Colorado)

Meeting Summary

Stephanie Tanner (EPA's WaterSense program) welcomed everyone to the meeting, clarified how to use the webinar software, and reviewed the meeting agenda. The PowerPoint slides from this presentation can be reviewed on the WaterSense website at: www.epa.gov/sites/production/files/2017-03/documents/ws-background-ssb-draft-specification1.pdf. The presentation discussion, participant questions, and EPA responses are summarized below.

1. Introduction, Notice of Intent (NOI), and WaterSense Research

Ms. Tanner provided an overview of the WaterSense program and its water-saving accomplishments through 2015. WaterSense is a voluntary program that labels water-efficient, high-performing products. WaterSense labeled products must perform as well or better than standard models; be 20 percent more water-efficient; realize savings on a national level; ensure water efficiency is achieved through many technological options; and be independently certified.

WaterSense released an NOI for landscape irrigation sprinklers in July 2014 that proposed specification development for both high-efficiency nozzles and pressure-regulating sprinkler bodies. Ms. Tanner explained that, due to public comments received and a lack of data on water savings produced by high-efficiency nozzles, WaterSense has chosen to move forward with specification development only for sprinkler bodies with integral pressure regulation at this time.

Ms. Tanner described some background information on spray sprinkler bodies with internal pressure regulation. In traditional sprinkler bodies, higher operating pressure can result in system inefficiencies and water waste, whether through excessive flow rates, misting, fogging, or uneven coverage. In sprinkler bodies with internal pressure regulation, constant outlet pressure and flow rate are maintained across a range of inlet pressures. This reduces excessive flows and waste that would otherwise occur at high pressures. Thus, the intent of a WaterSense specification for this product category is to label products that maintain the optimal flow rate for water efficiency and performance. The potential for water savings from installing these products is supported by field data provided by Utah State University and the Center for Resource Conservation (consisting of more than 9,000 data points from irrigation audits), demonstrating the extent of high irrigation system pressures. Many systems operate above 40 psi, which is the common threshold value for substantial water savings. WaterSense also requested any additional submission of similar data to help refine the draft specification.

2. Test Method Development and Performance Testing

Joanna Kind (ERG, contractor to EPA's WaterSense program) discussed the specification test method development process. While basing the protocol on *ASABE/ICC 802-2014: Landscape Irrigation Sprinkler and Emitter Standard (ASABE/ICC 802-2014)*, WaterSense has made modifications to address issues that arose during initial round robin laboratory testing and during additional performance testing by the University of Florida. For additional information on the round robin testing, please review the *Landscape Irrigation Sprinklers: WaterSense Specification Update*. The results from the University of Florida performance testing are located at www.epa.gov/watersense/product-background-materials.

3. Draft Specification for Spray Sprinkler Bodies

Ms. Tanner discussed the anticipated specification scope and associated definitions.

Brent Mecham (Irrigation Association) asked if the sprinklers tested in the field research were tested "right out of the box" or conditioned prior to testing. Ms. Tanner explained that the test protocol was modeled exactly after *ASABE/ICC 802-2014*. Mr. Mecham asked if the tested models were operated prior to testing to allow the regulator to properly function. Ms. Tanner confirmed that the *ASABE/ICC 802-2014* testing protocol does not call for such a conditioning period and thus, conditioning was unlikely to have occurred in the performance testing conducted by the University of Florida.

Sean Steffensen (CEC) asked about the performance of the tested spray sprinkler bodies at flows less than 0.75 gallons per minute (gpm). Ms. Tanner explained that the tests were only run at the flow rate stipulated in *ASABE/ICC 802-20 14* (1.5 gpm) and an additional higher flow rate suggested during the NOI comment period (3.5 gpm).

Mr. Steffensen asked if either the performance or effectiveness varied with flow rate, and explained he was unfamiliar with pressure-regulating devices and their performance at lower flow rates. Ms. Tanner explained that this answer was unknown at this time, but reiterated that WaterSense would be eager to receive submissions from stakeholders who may be able to provide these data. Mr. Steffensen referenced a previous study by Rain Bird conducted under its Project PRS (pressure regulating stem) examining water savings with pressure-regulating devices. Ms. Kind asked if that study examined rotor sprinkler nozzles or multi-stream multi-trajectory (MSMT) rotating sprinkler nozzles, as MSMT nozzles would fit the scope of this draft specification, but rotors would not. Mr. Steffensen said the study described them as rotor nozzles, but tested them at 45 psi, consistent with the MSMT sprinklers. Ms. Tanner reiterated that WaterSense was eager to receive any independent research conducted by stakeholders or industry experts related to this topic.

Michael Dukes (University of Florida) responded to Mr. Mecham's original comment on sprinkler conditioning, explaining that the sprinklers were likely run for several minutes at approximately 45 psi before testing was officially conducted, but the sprinklers were not run through the progressive pressure scale required for full testing.

4. Water Efficiency and Performance Criteria

Ms. Tanner discussed the proposed water efficiency and performance criteria under a potential WaterSense specification for spray sprinkler bodies. The three criteria are based on flow rate at the maximum operating pressure, average flow rate across all tested pressures, and minimum outlet pressure.

Mr. Steffensen asked if the average flow rate across all tested pressures was tested at each pressure individually, or if the individual flow rates over the four pressures were averaged. Ms. Tanner explained that the average of all four flow rates was tested, per the criteria proposed in the *WaterSense Draft Specification for Spray Sprinkler Bodies*.

5. General Requirements

Ms. Tanner explained that the proposed WaterSense specification would include similar general requirements as found in *ASABE/ICC 802-2014*, including product marking; health and safety factors; and installation and maintenance measures.

6. Certification and Labeling

Ms. Tanner described the standard process by which manufacturers can become WaterSense program partners and have their products tested, independently certified, and labeled by EPA licensed certifying bodies (LCBs). Ms. Tanner also described WaterSense certification and labeling requirements for product packaging and combination packaging, and instructed those with any questions or concerns to contact the WaterSense Helpline for assistance at (866) WTR-SENS (987-7367) or watersense@epa.gov.

Robert Reaves (Oklahoma City) asked whether WaterSense would consider allowing the posting of testing performance results to be optional, noting that many stakeholders prefer Smart Water Application Technologies (SWAT) because performance results are posted. (SWAT is an Irrigation Association national partnership initiative to promote landscape water-use efficiency through innovative technology¹) Ms. Tanner explained that WaterSense is a pass/fail program and aims to provide consumers with performance information only when it is necessary for proper use of the product. She provided examples of this practice within WaterSense for showerheads with minimum flow rates and force requirements for pre-rinse spray valves.

Mr. Mecham asked if there were stipulations pertaining to the number of manufacturing lots selected for certification testing. Ms. Tanner explained WaterSense sampling protocol follows *ASABE/ICC 802-2014*, which requires LCBs to sample products “off the shelves” or from a manufacturer’s packed production. Sampling from different lots would make certification more expensive for the LCB to conduct testing, Ms. Tanner said this requirement would increase the cost of certification. She noted that Annual Continuous Compliance sampling would capture some of these additional lots.

¹ Smart Water Application Technologies (SWAT). "Irrigation Association." Irrigation Association, 2017. Web. 24 March 2017. <<https://www.irrigation.org/SWAT/>>.

7. Next Steps

Ms. Tanner discussed the next steps in the specification development process and requested that those attending the webinar submit their comments to watersense@epa.gov. Ms. Tanner announced that the comment period would be extended past the original deadline of January 31, to February 17, 2017, but accommodations could be made for delayed submittals. The final specification is expected to be released in summer or fall 2017.

8. Additional Questions and Answers

Ms. Tanner answered additional questions from participants. Tim York (City of Aurora, Colorado) inquired if studying pressure regulation in rotor heads or creation of a draft specification for rotor models would be considered. Ms. Tanner suggested that doing so would require development of a new test method, but if one were to be submitted, WaterSense could consider the prospect.

Mr. Reeves asked if the attendees would be notified when the summary notes and webinar questions would be posted on the WaterSense website, and Ms. Tanner responded that they would be posted, along with the results from the University of Florida performance testing, in April 2017.

Mr. Mecham inquired about an official submittal form for written comments, and Ms. Tanner directed the attendees to the WaterSense website (www.epa.gov/watersense). She encouraged attendees to submit any questions or comments to watersense@epa.gov, and emphasized that it is helpful when those who request revisions to programmatic or policy language provide their desired revisions directly within their comments.

Mr. Steffensen asked if there are critical characteristics of the adapter used during research testing between the spray body and needle valve that would affect test results, such as minimum or maximum length or inside diameter. Ms. Kind said that the University of Florida laboratory constructed its own custom adapter to connect the needle valve to the sprinkler body, as stipulated in the test method. WaterSense ideally would stipulate within a specification that this adapter should be submitted by the manufacturer to the LCB along with the products for testing. Dr. Dukes added that the adapter was connected as close as practically possible to the stem, and this may be limited by the materials available. He noted that the inside diameter cannot be smaller than the stem.

Mr. Reeves, Mr. Mecham, and Ms. Erica Bauman (K-Rain Manufacturing) asked similar questions regarding whether each model in a series of sprinkler bodies with different pop-up heights (e.g., 3-, 4-, 6-inch, etc.) would need to be submitted for testing, or if one model of a certain height could go through the test and the certification be applied to all sprinkler bodies in that series that use the same pressure regulator? Ms. Tanner responded that the latter scenario was likely to be true, if the regulating device is in fact the same across the different models. Ms. Bauman asked if the engineering and/or design of a regulator changes, would the product need to be submitted for re-testing, and Ms. Tanner clarified that this was true. If the design or functional mechanism has changed, the would product need to be submitted for retesting.

Mr. Mecham asked Dr. Dukes about the apparatus used in the performance testing conducted at University of Florida; specifically, was there any leakage out of the stem that could have been detected by the flow meter during testing, as the attachment added to the end of the stem is rather heavy? Dr. Dukes said the team had to devise a shim to prop up the end of the stem and keep it level during testing to prevent this problem.

Daniela Urigwe (Energy Solutions) asked how LCBs are chosen and if they calibrate their instrumentation on a regular schedule. Ms. Tanner explained the LCB accreditation process and quality management programs; she directed the audience to the WaterSense website for more information on this process (www.epa.gov/watersense/specifications-and-certifications).

Ms. Tanner encouraged any manufacturers participating in the webinar who were not already WaterSense program partners to contact the WaterSense Helpline to learn more about partnership at (866) WTR-SENS (987-7367) or watersense@epa.gov. Mr. Reaves inquired about the costs of testing, but Ms. Tanner explained that testing costs are proprietary information for LCBs; therefore, manufacturers are encouraged to contact program LCBs for information about their packages and rates.

Ms. Tanner adjourned the meeting by reminding participants that materials would be available in April, the comment period was extended by two weeks, and that WaterSense is specifically seeking information and data on irrigation system pressure and product performance at low flow rates. Ms. Tanner reiterated that WaterSense is seeking written comments on the material proposed within this presentation.