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Additional submitted attachment is included below.

EPA WaterSense

A partnership program of the
U.S. Environmental Protection Agency

June 16, 2017

California Energy Commission
Docket Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Docket #17-AAER-08 – Spray Sprinkler Bodies

Dear California Energy Commission,

The U.S. Environmental Protection Agency's (EPA's) WaterSense® program thanks the California Energy Commission (CEC) for the opportunity to participate in the appliance efficiency pre-rulemaking process. WaterSense is a voluntary partnership program that labels water-efficient products and services and promotes efficient water use throughout the United States. The WaterSense label is intended to easily identify products and services that use 20 percent less water, save energy, and perform as well as or better than standard models on the market. To date, WaterSense has developed specifications for seven plumbing and irrigation product categories, including tank-type toilets, flushometer-valve toilets, urinals, showerheads, lavatory faucets and faucet accessories, pre-rinse spray valves, and weather-based irrigation controllers, and has developed additional specifications for homes and irrigation professional certification programs.

WaterSense's goal in submitting comments to CEC is to provide it with any research EPA has conducted and publicly available data we have collected in our specification development efforts. During the specification development process, WaterSense engages various stakeholders and partners, including water and energy utilities, manufacturers, industry professionals, and the general public. Wherever feasible, WaterSense specifications reference existing, consensus-based national standards as the basis for the water efficiency and performance testing protocols. In cases where a consensus-based standard does not exist or is deficient in meeting WaterSense's criteria for specification adoption, EPA works with standards organizations and industry stakeholders to develop repeatable test methods that provide reproducible results.

Principally, WaterSense encourages harmony between CEC regulations and WaterSense specifications, particularly regarding the referenced efficiency and performance test methods. This will serve to:

1. **Ease the compliance cost and burden on manufacturers.** Manufacturers will be able to have products tested a single time for compliance with the applicable CEC regulation and/or the voluntary WaterSense specification.
2. **Provide utilities and consumers with clear and consistent information.** Product efficiency and performance will be easily comparable across states, regions, and the country.

WaterSense published a specification for weather-based irrigation control technologies (WBICs) in 2011 and is currently developing specifications for two additional irrigation products: soil moisture sensor-based control technologies (SMSs) and spray sprinkler bodies (SSBs), with a final specification for SSBs anticipated to be released later this summer. WaterSense is submitting comments to CEC documenting the process used to develop the specifications, identify documents published to date (e.g., Notices of Intent [NOIs] or draft specifications), and demonstrate the preferred adoption of consistent, consensus-based standards, as well as a sound specification development process that includes stakeholder input from industry, water and energy utilities, water efficiency advocates, and the public. WaterSense is also providing links to data gathered to date and is available to discuss the information presented below with CEC if needed. The comments below highlight WaterSense's extensive product research to investigate potential water savings and performance criteria. EPA appreciates CEC's consideration of this information in the appliance efficiency pre-rulemaking process.

Comments on SSBs

WaterSense examined landscape irrigation sprinklers (the combination of SSBs and high-efficiency nozzles) and published an NOI for this product category in 2014. In November 2015, WaterSense decided to move forward with developing a draft specification for SSBs with integrated pressure regulation but put on hold developing a specification for high-efficiency nozzles based on public comment and a lack of water savings data. The basis for this decision is included in the *Landscape Irrigation Sprinklers: WaterSense Specification Update*.

In moving forward with specification development for SSBs, WaterSense needed 1) a repeatable test method that would provide reproducible results at any laboratory and 2) a range of associated performance data for several products currently available on the market that could be used to establish the performance level.

In 2015, WaterSense began examining the use of an American Society for Agricultural and Biological Engineers (ASABE) and International Code Council's (ICC's) test method, *802-2014 Landscape Irrigation Sprinkler and Emitter Standard (ASABE/ICC 802-2014), Section 303.5.2 (pressure regulation)*. As mentioned above, WaterSense seeks to adopt or base its test methods

on those included in consensus-based standards, when available. This standard aims to specifically test the pressure-regulating performance of SSBs via flow rate variation relative to the initial flow rate and regulation pressure. The committee that developed *ASABE/ICC 802-2014* was comprised of several stakeholder groups, including industry, irrigation experts, and government agencies, and underwent several rounds of public comment. It should be noted that at the time of its publication the test methods included in the standard had not undergone any round robin testing for repeatability or product performance.

As part of its test method adoption or development, WaterSense ensures the method is both repeatable among multiple laboratories and produces consistent results; therefore, WaterSense worked with three independent laboratories to conduct testing on several SSBs with and without pressure-regulation, using a modified version of the test method included in *ASABE/ICC 802-2014*. These modifications were based on either public comment from the NOI phase or suggestions by the laboratories. First, stakeholders requested through public comment that a low- and a high-flow be tested. The standard only requires testing at one flow rate (1.5 gallons per minute [gpm]), so WaterSense incorporated testing at a high flow rate (3.5 gpm) as well. Second, stakeholders requested that outlet flow be measured in addition to outlet pressure, so WaterSense incorporated an outlet flow rate measurement. Additionally, WaterSense allowed the laboratories to use a variety of devices to control flow (e.g., needle valve, variable arc nozzle, or other device) instead of the standard orifice required by *ASABE/ICC 802-2014* because the laboratories found the standard orifice to be onerous and unnecessary. WaterSense received no data indicating that a different method of controlling the flow provided better or more consistent results.

WaterSense also reduced the number of pressure levels from 12, as specified in *ASABE/ICC 802-3014*, to five. This change reduced the time required for each test, though it still allowed for each product to be tested at a range of pressures (i.e., 10 pounds per square inch [psi] above the regulated pressure up to the maximum operating pressure).

The three laboratories conducted performance testing using the revised test method between April 2015 and April 2016. Each laboratory tested three models of SSBs with pressure regulation (from three separate brands) and three models of SSBs without pressure regulation of the same brands, with three samples of each model. Results from the performance testing demonstrated that the products perform as intended, though results were inconsistent among laboratories, indicating that the test method needed to be further clarified in several areas. Specifically, the various methods the laboratories used to control flow (i.e., variable arc nozzles, ball valve, and needle valve) appeared to impact results. The laboratory using the variable arc nozzles stressed the difficulty of controlling flow to the specifications provided in the test method, and the ball valve did not provide for consistent flow control. The needle valve provided the most consistent

results from test to test. Therefore, WaterSense revised the test method to specify that a needle valve shall be used to control flow. Additionally, WaterSense revised the method to introduce a reduction to 0 psi between each pressure level to address hysteresis found in initial results. For additional information on the independent laboratory performance testing and subsequent test method revisions, please review *Landscape Irrigation Sprinklers: WaterSense Specification Update*, published in November 2015.

WaterSense then contracted with the University of Florida to conduct a final round of performance testing on nine SSBs with pressure regulation and three SSBs without pressure regulation using the revised test method. This testing was conducted to determine a range of performance of SSBs, as well as to determine the water savings of these products when compared to their standard counterparts (i.e., SSBs without pressure regulation). The data from the University of Florida performance testing formed the basis of the water savings calculations included in WaterSense program materials, as well as the performance criteria included in the specification. These data are available in the final report, *Pressure Regulating Spray Sprinkler Body Final Test Report*.

WaterSense published the *Draft Specification for Spray Sprinkler Bodies* in November 2016, as well as a supporting statement including water savings calculations for this product category and performance data supporting the proposed criteria. WaterSense took public comment until February 17, 2017, and hosted a public meeting to receive feedback and answer questions. WaterSense offers the stakeholder presentation and a summary of the meeting for CEC consideration. WaterSense also compiled public comments on the draft specification and is currently reviewing these comments and developing the final specification and supporting materials. It is scheduled to publish a final specification in mid-2017. WaterSense is also working with ICC/ASABE to update the 802 standard with the revised test method. With this projected timeline, labeled SSBs may start to appear on the market by the end of this year.

EPA encourages CEC to adopt a consensus-based test method for spray sprinkler bodies that includes the modifications proposed by WaterSense. As mentioned above, WaterSense seeks to harmonize the use of test methods with CEC to benefit utilities, consumers, and manufacturers. As demonstrated above, EPA has extensive experience with this product category and has conducted research on the performance of these products. We are eager to share our historical knowledge and provide publicly available data to CEC to assist you in your rulemaking process. Please contact Stephanie Tanner (tanner.stephanie@epa.gov; 202-564-2660) or the WaterSense Helpline (watersense@epa.gov) to discuss any of the information or data discussed in this comment submission. Thank you again for the opportunity to comment, and we look forward to discussions moving forward.

EPA WaterSense

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U.S. Environmental Protection Agency

Sincerely,

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