

WaterSense® Notice of Specification Review

I. Introduction and Background

WaterSense is a voluntary partnership program sponsored by the U.S. Environmental Protection Agency (EPA). The program's foundation is the WaterSense label, which identifies products that have been third-party certified to be at least 20 percent more water efficient and perform as well as or better than standard models. WaterSense released its first product specification for tank-type toilets to earn the label in January 2007. The program has since developed a total of eight product specifications for plumbing and irrigation products, as well as specifications for homes and professional certification programs. Through 2017, WaterSense labeled products have helped consumers save more than 2.7 trillion gallons of water and \$63.8 billion in water and energy bills.

On October 24, 2018, the *America's Water Infrastructure Act of 2018*¹ formally authorized the EPA's WaterSense program. The new law requires that, not later than December 31, 2019, the EPA shall "consider for review and revise, if necessary, any WaterSense performance criteria adopted before January 1, 2012." This necessitates the review of several specifications, including WaterSense's specifications for tank-type toilets, lavatory faucets and faucet accessories, showerheads, flushing urinals, and weather-based irrigation controllers. It also includes WaterSense's specification for homes; however, the EPA is currently in the process of revising that specification under a separate effort.² WaterSense has also released specifications for flushometer-valve water closets, spray sprinkler bodies, and pre-rinse spray valves³, as well as irrigation professional certification programs. Because these specifications were published or underwent major revision after January 1, 2012, the EPA is not considering these specifications in its review effort.

Consistent with existing program guidelines, in revising a WaterSense specification, the law states that the EPA shall:

- (A) Provide reasonable notice to interested parties and the public of any changes, including effective dates, and an explanation of the changes;
- (B) Solicit comments from interested parties and the public prior to any changes;
- (C) As appropriate, respond to comments submitted by interested parties and the public; and
- (D) Provide an appropriate transition time prior to the applicable effective date of any changes, taking into account the timing necessary for the manufacture, marketing, training, and distribution of the specific water-efficient product, building, landscape, process, or service category being addressed.

With this *Notice of Specification Review*, the EPA is engaging interested stakeholders in the specification review process and, as a first step, is inviting stakeholders to provide feedback on whether it is appropriate to revise the WaterSense specifications for tank-type toilets, lavatory

¹ America's Water Infrastructure Act of 2018. www.congress.gov/bill/115th-congress/senate-bill/3021/text

² Learn more about the revision process related to the WaterSense specification for homes at:

www.epa.gov/watersense/homes-specification#HomeNOI

³ The EPA is in the process of sunsetting the *WaterSense Specification for Commercial Pre-Rinse Spray Valves* on January 1, 2019. Learn more at: www.epa.gov/sites/production/files/2018-10/documents/ws-products-commercial-prsv-notice-sunset.pdf

faucets and faucet accessories, showerheads, flushing urinals, and weather-based irrigation controllers. Section II of this notice provides some general criteria and initial program considerations for revising the specifications. Section III provides a summary of the current specifications and market for each product category, as well as considerations for a potential revision. Section IV summarizes general questions for stakeholders to consider for each specification when providing feedback to WaterSense on whether to revise a specification. Lastly, Section V discusses the review process, beginning with this notice, and tentative timeline for the EPA's activities.

As required by the *America's Water Infrastructure Act of 2018*, where feasible and appropriate, WaterSense will continue working with standard development bodies to collect pertinent information, and as appropriate, adopt or revise consensus performance and efficiency criteria and test methods that will form the basis for its specification revisions.

II. WaterSense Criteria and Considerations for Specification Revisions

The EPA intends to evaluate a variety of factors as it considers the specifications for review and revision. These factors may include additional water savings potential, continued applicability or availability of efficiency and performance test methods and criteria, availability of more efficient products in the marketplace, potential for specification scope expansion, and/or unintended impacts of further flow reductions on the systems in which the products may be installed.

To provide transparency in its decision-making process, the EPA intends to use the following criteria and considerations to determine whether it will revise each of the applicable specifications. The EPA is seeking feedback regarding these criteria or other factors it should consider.

Within the [WaterSense Program Guidelines](#),⁴ the EPA includes conditions that might trigger a technical revision to a specification. For product specifications, these conditions are described below.

- WaterSense labeled products in a specific category comprise a significant portion of the market share based on the number of units shipped as reported by WaterSense partners. In this instance, market share means the ratio of WaterSense labeled units to non-WaterSense labeled units sold in the same product category.
- The EPA identifies significant and broadly available improvements in technology or product design in any labeled product category that improves the product's water efficiency. In this context, significantly improved products include products that are approximately 10 percent more efficient or higher-performing than current WaterSense labeled products, are offered by multiple manufacturers, and/or capture approximately 10 percent or more of the total market share for that product category.
- The EPA becomes aware of performance issues associated with products that are currently labeled under the specification.
- A water efficiency standard is adopted nationally that would mandate product efficiency equivalent to that in the specification, such that the WaterSense label would no longer differentiate products that were more efficient than those meeting the national standard.

⁴ *WaterSense Program Guidelines*, Version 5.3. December 2016. www.epa.gov/sites/production/files/2017-02/documents/ws-program-guidelines.pdf.

The EPA will also consider the following in determining the feasibility in establishing, or in this case, revising a product specification:⁵

- Equal or superior product performance compared to conventional models.
- Potential for significant water savings on a national level.
- State of technology development—product categories that rely on a single, proprietary technology will not be eligible for the label.
- Assurance that the development (or revision) of a specification will not lead to unintended or negative environmental or economic impacts.
- Ability to measure and verify water savings and performance.
- Cost-effectiveness.

In the context of the criteria above, the EPA will review the scope, efficiency, and performance criteria within each specification under consideration for revision to determine if updates are necessary. The EPA will also review the current product marketplace, including product shipment data submitted by WaterSense manufacturer partners as part of annual reporting, to understand the market share of WaterSense labeled products and learn about technological advancements and subsequent efficiency and performance improvements that have been made since each specification’s initial release.

III. Summary of Current Product Specification and Market Information

The following section presents a summary of the current information WaterSense has regarding the specification criteria and market for each product category. WaterSense intends to build upon this information through this notice and future collaboration with interested stakeholders to inform its specification revision decisions and process. Table 1 summarizes specification, manufacturer partner, and labeled model information related to the five specifications WaterSense is considering for revision. The subsections below include additional information and considerations for each product category.

Table 1. Summary Information for WaterSense Specifications Considered for Revision

Specification	Release Date	Last Revision	Reference Standards ⁶	Approximate Number of Manufacturer Partners ⁷	Number of Labeled Models ⁷
<i>WaterSense Specification for Tank-Type Toilets</i>	January 24, 2007	June 2, 2014 (Version 1.2)	<i>American Society of Mechanical Engineers (ASME) A112.19.2/Canadian Standards Association (CSA) B45.1</i>	142	3,400

⁵ As explained in the “How Does WaterSense Develop Specifications for Products to Earn the Label?” section of the WaterSense website. www.epa.gov/watersense/product-specifications#pane-5

⁶ Reference standards refer to the consensus-based performance and efficiency test protocols that WaterSense has partially or fully adopted, by reference, within each specification.

⁷ As of November 2, 2018.

Table 1. Summary Information for WaterSense Specifications Considered for Revision

Specification	Release Date	Last Revision	Reference Standards ⁶	Approximate Number of Manufacturer Partners ⁷	Number of Labeled Models ⁷
<i>High-Efficiency Lavatory Faucet Specification</i>	October 1, 2007	N/A	ASME A112.18.1/CSA B125.1	295	16,243
<i>WaterSense Specification for Flushing Urinals</i>	October 8, 2009	N/A	ASME A112.19.2/CSA B45.1; American Society of Sanitary Engineering (ASSE) 1037	25	602
<i>WaterSense Specification for Showerheads</i>	March 4, 2010	July 26, 2018 (Version 1.1)	ASME A112.18.1/CSA B125.1	178	8,212
<i>WaterSense Specification for Weather-Based Irrigation Controllers</i>	November 3, 2011	N/A	Smart Water Application Technologies (SWAT) Test Protocol for Climatologically Based Controllers (8 th Draft) with modifications	32	792

Tank-Type Toilets

The EPA released the [WaterSense Specification for Tank-Type Toilets](#) on January 24, 2007. The EPA has since completed two minor revisions to the specification, releasing the latest version (Version 1.2) in June 2014. Under the *WaterSense Specification for Tank-Type Toilets*, tank-type toilets must meet the criteria summarized below, as applicable, to earn the WaterSense label:

- Toilets shall conform to applicable requirements in ASME A112.19.2/CSA B45.1 *Ceramic Plumbing Fixtures*. Toilets with dual-flush capabilities shall conform to requirements in ASME A112.19.14 *Six-Liter Water Closets Equipped with a Dual-Flushing Device*.
- The effective flush volume shall not exceed 1.28 gallons (4.8 liters).
- Toilets shall pass flush performance criteria based on testing conducted in accordance with the waste extraction test protocol provided in ASME A112.19.2/CSA B45.1.⁸
- Products shall be marked with the flush volume according to ASME A112.19.2/CSA B45.1.

The 1.28 gallons per flush (gpf) flush volume criteria represents a 20 percent reduction in water use compared to the 1.6 gpf federal standard established by the Energy Policy Act of 1992 (EPA 1992). The performance requirements referenced in the specification reflect the current consensus standards for this product category in the United States and Canada.

⁸ The waste extraction test requires toilets to clear 350 grams of miso paste and four balls of toilet paper.

To date, approximately 142 manufacturers have produced 3,400 WaterSense labeled tank-type toilet models. Table 2 provides a summary of the number and percentage of labeled tank-type toilet models within different flush volume ranges.

Table 2. Number and Percentage of WaterSense Labeled Tank-Type Toilet Models by Flush Volume (gpf)

Effective Flush Volume ⁹	≤ 1.28 gpf and > 1.1 gpf	≤ 1.1 gpf and >1.0 gpf	≤ 1.0 gpf and >0.8 gpf	≤ 0.8 gpf
Number of Models	2,627	438	265	70
Percent of Total	77.3%	12.9%	7.8%	2.1%

WaterSense is exploring several areas related to revising the tank-type toilet specification including further reducing the flush volume and enhancing the performance requirements. Some initial program considerations and questions include:

- **Changes in the market.** At least six states and multiple municipalities throughout the United States have adopted regulations mandating that tank-type toilets operate at a flush volume of 1.28 gpf or less, consistent with the WaterSense specification. In a potential revision, should WaterSense consider additional reductions to the maximum allowable effective flush volume criteria to improve water efficiency beyond the current WaterSense specification and potentially further transform the market?
- **Performance considerations.** Because the specification criteria are set to pass or fail, WaterSense does not collect data on the specific levels of product performance (e.g., the amount of waste each toilet can clear). However, Maximum Performance (MaP) Testing, upon which the WaterSense waste extraction performance test was originally based, conducts independent testing of tank-type toilets to assess performance beyond the criteria established by WaterSense. WaterSense requires toilets to fully flush 350 grams of miso paste, a test media having similar physical properties to human waste, along with toilet paper. MaP evaluates tank-type toilet flushing performance up to 1,000 grams, issuing a MaP score commensurate to the grams of waste evacuated from the toilet bowl. To date, 2,163 toilet models have achieved a MaP score of 600 grams or greater, with 1,418 achieving the maximum allowable MaP score of 1,000 grams.¹⁰ Are stakeholders aware of data to support a connection between increased performance and user satisfaction? Should WaterSense consider revising its performance criteria to require tank-type toilets to clear a larger quantity of waste and/or toilet paper?
- **System concerns.** If WaterSense reduces the maximum allowable effective flush volume for tank-type toilets, will this have a significant and adverse impact on premise plumbing systems (e.g., drainlines)? If so, are there data to substantiate the impact at various flush volume levels?

Lavatory Faucets and Faucet Accessories

The EPA released the [High-Efficiency Lavatory Faucet Specification](#) on October 1, 2007, and has not revised the specification since its initial release. Lavatory faucets and faucet

⁹ Dual-flush tank-type toilets are listed based on their effective flush volume, calculated by averaging the flush volume from one full-flush and two reduced-flushes.

¹⁰ MaP Testing. Tank-type Toilets Complete MaP List. November 5, 2018. www.map-testing.com/downloads.html

accessories (e.g., flow restrictors, flow regulators, aerator devices, laminar devices) must meet the criteria summarized below, as applicable, to earn the WaterSense label:

- Lavatory faucets and faucet accessories shall conform to applicable requirements in ASME A112.18.1/CSA B125.1 *Plumbing Supply Fittings* and NSF/ANSI Standard 61 *Drinking Water System Components – Health Effects*, Section 9.
- The maximum flow rate shall be equal to or less than 1.5 gallons per minute (gpm) (5.7 Liters per minute [Lpm]) at a flowing pressure of 60 pounds per square inch (psi).
- The minimum flow rate shall not be less than 0.8 gpm (3.0 Lpm) at a flowing pressure of 20 psi.
- The product and/or product packaging shall be marked with the maximum flow rate.

The 1.5 gpm flow rate criteria represents a 32 percent reduction in the maximum allowable flow rate when compared to the 2.2 gpm federal maximum flow rate standard established by the U.S. Department of Energy (DOE).¹¹ The performance requirements referenced in the specification represent the current consensus standards for this product category in the United States and Canada.

To date, approximately 295 manufacturers have produced more than 16,000 WaterSense labeled lavatory faucet and lavatory faucet accessory models. Table 3 provides a summary of the number and percentage of lavatory faucet and faucet accessory models labeled within different flow rate ranges.

Table 3. Number and Percentage of WaterSense Labeled Faucet and Faucet Accessory Models by Flow Rate (gpm)

Maximum Flow Rate	≤ 1.5 gpm and > 1.2 gpm	≤ 1.2 gpm and > 1.0 gpm	≤ 1.0 gpm
Number of Models	9,669	5,657	917
Percent of Total	59.5%	34.8%	5.6%

WaterSense is exploring several areas related to revising the lavatory faucet specification including additional reductions to the lavatory faucet flow rate and expanding the scope of the specification to include other faucet types. Some initial program considerations and questions include:

- **Changes in the market.** At least four states and multiple municipalities throughout the United States have adopted regulations mandating that lavatory faucets operate at a maximum flow rate of 1.5 gpm or less when tested at a flowing pressure of 60 psi, consistent with the WaterSense specification. California requires lavatory faucets to have a flow rate of 1.2 gpm or less, which is a 20 percent reduction in maximum flow rate compared to the WaterSense specification. As indicated in Table 3, there are currently products available in the marketplace that can meet the lower maximum flow rate criteria California established, while also adhering to WaterSense’s minimum flow

¹¹ EPA Act 1992 originally set the maximum allowable flow rate for both lavatory and kitchen faucets at 2.5 gpm at 80 psi. In 1994, ASME established a performance standard in A112.18.1M-1994 to which all faucets were required to comply and set the maximum flow rate for lavatory faucets at 2.2 gpm at 60 psi. In response to industry’s request for conformity with a single standard, DOE adopted a uniform standard maximum flow rate of 2.2 gpm at 60 psi for all faucets in 1998.

rate requirement of 0.8 gpm at 20 psi. In a potential revision, should WaterSense consider additional reductions to the maximum allowable flow rate criteria to improve water efficiency beyond the current WaterSense specification and potentially further transform the market?

- **Potential scope expansion.** WaterSense is considering expanding the scope of the *High-Efficiency Lavatory Faucet Specification* to accommodate other faucet types. Since the specification's release, manufacturer and promotional partners and other stakeholders have inquired about the potential for WaterSense to label other faucet types that are common in homes and businesses, such as kitchen faucets or metering faucets. In considering this scope expansion, WaterSense is interested in feedback on the potential water efficiency and performance criteria it should establish for these other faucet types. WaterSense is also interested in potential water savings estimates from each potential faucet type (i.e., kitchen, deck mounted, metering, other flow control devices) that could be achieved from installing higher efficiency products in place of standard models.

Flushing Urinals

The EPA released the [WaterSense Specification for Flushing Urinals](#) on October 8, 2009, and has not revised the specification since its initial release. Urinal fixtures and flushing devices must meet the criteria summarized below, as applicable, to earn the WaterSense label:

- The average maximum water consumption must not exceed 0.5 gpf (1.9 Lpf), when tested in accordance with ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 *Stainless Steel Plumbing Fixtures*, or IAPMO Z124.9 *Plastic Urinal Fixtures*,¹² as applicable.
- Urinal fixtures must conform to ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4, or IAPMO Z124.9, as applicable, when tested with a flushing device with the same rated flush volume.
- Pressurized flushing devices must conform to ASSE #1037 *Performance Requirements for Pressurized Flushing Devices for Plumbing Fixtures*.¹³
- Flush tank (gravity type) flushing devices must conform to ASME A112.19.2/CSA B45.1.
- The flushing device must not contain a flush volume adjustment that allows the flush volume to vary more than ± 0.1 gpf and may not be packaged, marked, or provided with instructions directing a user to an alternative flush volume setting.
- The urinal fixture and flushing device product and product packaging must be marked with the rated flush volume.

The 0.5 gpf flush volume criteria represents a 50 percent reduction in water use from the current 1.0 gpf federal maximum flush volume standard established by EPlact 1992. The performance requirements referenced in the specification represent the current consensus standards for this product category in the United States and Canada.

To date, approximately 25 manufacturers have produced more than 600 WaterSense labeled product models—including flush devices, fixtures, and urinal systems (combinations of urinal

¹² IAPMO Z124.9 has since been superseded by CSA B45.5/IAPMO Z124 *Plastic plumbing fixtures*.

¹³ ASSE 1037 has since been superseded by ASSE 1037/ASME A112.1037/CSA B125.37 *Performance Requirements for Pressurized Flushing Devices for Plumbing Fixtures*.

flushing devices and fixtures). Table 4 provides a summary of the number and percentage of labeled models within different flush volume ranges.

Table 4. Number and Percentage of WaterSense Labeled Flushing Urinal Models by Flush Volume (gpf)

Flush Volume	≤ 0.5 gpf and > 0.25 gpf	≤ 0.25 gpf and > 0.125 gpf	≤ 0.125 gpf
Number of Models	265	88	249
Percent of Total	44.0%	14.6%	41.4%

WaterSense is exploring several areas related to revising the flushing urinal specification including further reducing the flush volume. Some initial program considerations and questions include:

- Changes in the market.** At least five states and multiple municipalities throughout the United States have adopted regulations mandating that urinals have a flush volume of 0.5 gpf or less, consistent with the WaterSense specification. California requires wall-mounted urinals to have a flush volume of 0.125 gpf or less, although non-wall mounted urinals can have a flush volume up to 0.5 gpf. In a potential revision, should WaterSense consider reducing the maximum allowable flush volume criteria to improve water efficiency beyond the current WaterSense specification and potentially further transform the market?
- System concerns.** If WaterSense reduces the maximum allowable flush volume for urinals, will it have a significant and adverse impact on premise plumbing systems (e.g., drainlines)? If so, are there data to substantiate the impact at various flush volume levels?
- Potential scope expansion.** As explained in WaterSense’s *Guidance on inclusion of non-water using urinals in water efficiency incentive programs*,¹⁴ WaterSense does not intend to incorporate non-water urinals into its specification for flushing urinals. Non-water urinals that meet applicable ANSI and ASME standards are inherently water-efficient. However, there is at least one product (called a hybrid urinal) that combines the non-water urinal technology with a periodic drainline clearing flush. WaterSense is interested in more information on the long-term performance and water efficiency of this product type, as well as an indication of whether there are other similar products on the market.

Showerheads

The EPA released the [WaterSense Specification for Showerheads](#) on March 4, 2010. In 2018, WaterSense completed a minor revision to the specification, releasing Version 1.1. The minor revision reflected 2018 revisions to the ASME A112.18.1/CSA B125.1 *Plumbing Supply Fittings* standard and revised, through reference to ASME A112.18.1/CSA B125.1, the spray force performance testing protocol to accommodate high-efficiency rain showers, which have become more popular for consumers since the EPA released the original specification.

¹⁴ Guidance can be reviewed at: www.epa.gov/sites/production/files/2017-01/documents/ws-products-nonwater-urinal-guide.pdf

Under the *WaterSense Specification for Showerheads*, showerheads must meet the criteria summarized below, as applicable, to earn the WaterSense label:

- Showerheads shall conform to applicable requirements in ASME A112.18.1/CSA B125.1.
- The maximum flow rate shall be equal to or less than 2.0 gpm (7.6 Lpm).
- The minimum flow rate tested at a flowing pressure of 20 psi must not be less than 60 percent of the maximum flow rate.
- The minimum flow rate tested at a flowing pressure of 45 psi and 80 psi must not be less than 75 percent of the maximum flow rate.
- The minimum spray force shall not be less than 2.0 ounces at flowing pressure of 20 psi.
- The spray coverage of the showerhead shall meet criteria included in ASME A112.18.1/CSA B125.1.
- Showerheads and associated packaging shall be marked according to ASME A112.18.1/CSA B125.1, including the maximum flow rate marking.

The 2.0 gpm flow rate criteria represents a 20 percent reduction in water use compared to the 2.5 gpm federal maximum flow rate standard established by EPAct 1992. The performance requirements referenced in the specification represent the current consensus standard for this product category in the United States and Canada.

To date, approximately 178 manufacturers have produced more than 8,200 WaterSense labeled showerhead models. Table 5 provides a summary of the number and percentage of labeled models within different flow rate ranges.

Table 5. Number and Percentage of WaterSense Labeled Showerhead Models by Flow Rate (gpm)

Maximum Flow Rate	≤ 2.0 gpm and > 1.8 gpm	≤ 1.8 gpm and > 1.75 gpm	≤ 1.75 gpm and > 1.5 gpm	≤ 1.5 gpm and > 1.3 gpm	≤ 1.3 gpm
Number of Models	3,549	1,288	2,136	973	266
Percent of Total	43.2%	15.7%	26.0%	11.8%	3.2%

WaterSense is exploring several areas related to revising the showerhead specification including further reducing the flow rate and enhancing the performance requirements. Some initial program considerations and questions include:

- **Changes in the market.** At least three states and multiple municipalities throughout the United States have adopted regulations mandating that showerheads have a maximum flow rate of 2.0 gpm or less when tested at a flowing pressure of 80 psi, consistent with the WaterSense specification. As of July 1, 2018, California requires showerheads to have a flow rate of 1.8 gpm or less, which is a flow rate that is 10 percent lower than the current WaterSense specification. In a potential revision, should WaterSense consider additional reductions to the maximum allowable flow rate to improve water efficiency beyond the current WaterSense specification and potentially further transform the market?
- **Health and safety impacts.** In developing the specification, WaterSense considered whether reducing the flow rate would increase the risk of thermal shock or scalding. For

more background, stakeholders should review the discussion in the *WaterSense Specification for Showerheads Supporting Statement*¹⁵. Since the initial release of the specification, industry has worked to harmonize the automatic-compensating mixing valve standard (ASSE 1016-2017/ ASME A112.1016-2017/ CSA B125.16-17 *Performance requirements for automatic compensating valves for individual showers and tub/shower combinations*) and the showerhead standard (ASME A112.18.1/CSA B125.1) to address incompatibilities of these plumbing system components and to ensure products are marked and packaged consistently to educate consumers and plumbing professionals on these risks. However, WaterSense is interested in feedback on whether decreasing the flow rate maximum for showerheads could result in additional concerns related to thermal shock and scalding.

Weather-based Irrigation Controllers

The EPA released the [WaterSense Specification for Weather-Based Irrigation Controllers](#) on November 3, 2011. While the EPA has not revised this specification since its publication, WaterSense has issued several technical clarifications in the intervening years to clarify the requirements. The specification applies to stand-alone controllers, add-on devices, and plug-in devices (collectively referred to in the specification as controllers) that use weather data as a basis for scheduling irrigation. Controllers must meet the criteria summarized below:

- Irrigation adequacy, as calculated in accordance with the eighth draft of the Smart Water Application Technologies™ test protocol for climatologically-based controllers (SWAT protocol) modified by the specification, shall be greater than or equal to 80 percent for each zone.
- Irrigation excess, as calculated in accordance with the SWAT protocol modified by the specification, shall be less than or equal to 10 percent for each zone. The average of the irrigation excess scores calculated across the six zones shall be less than or equal to 5 percent.
- The controller must conform to the supplemental capability requirements specified in Section 4.0 of the specification, such as the ability to interface with a rainfall device, capability to accommodate watering restrictions, and inclusion of a percent adjust (water budget) feature, among others.

The irrigation adequacy criterion is based on well-documented research that indicates the appearance of warm and cool season turfgrasses do not significantly differ when irrigated between 80 and 100 percent of their specific evapotranspiration rates¹⁶. The irrigation excess criterion allows for a reasonable amount of variation in controller scheduling but prevents excessive overwatering.

Weather-based irrigation controllers currently on the market either: 1) utilize onsite weather sensors; 2) receive a weather signal from a local weather station(s); or 3) use both, to schedule irrigation to meet plant needs.

¹⁵ WaterSense Specification for Showerheads Supporting Statement. www.epa.gov/sites/production/files/2017-01/documents/ws-products-support-statement-showerheads.pdf

¹⁶ WaterSense Specification for Weather-Based Irrigation Controllers Supporting Statement. www.epa.gov/sites/production/files/2017-02/documents/ws-background-controllers-suppstatement.pdf

Research available at the time of specification publication suggested water savings associated with this product category to be approximately 15 percent¹⁷.

To date, approximately 32 manufacturers have produced nearly 800 WaterSense labeled weather-based irrigation controller models. Table 6 provides the number of WaterSense labeled controller models by type¹⁸.

Table 6. WaterSense Labeled Weather-Based Irrigation Controller Models by Type

	Stand-alone Controllers	Plug-in Devices	Add-on Devices
Number of models	770	19	3
Percent of total	97.2%	2.4%	0.4%

Since the specification was released in 2011, there has been a significant increase in both the number of brands on the market, as well as the number of labeled models (see Figure 1). There were only nine manufacturer partners in 2011; that number has grown to almost 45 in 2018. Similarly, there were approximately 70 labeled models in 2012; that number has grown by a factor of ten as of 2018. This is relevant to a potential specification revision because many manufacturers and other stakeholders currently in the marketplace were not in existence and able to participate in specification development prior to 2011. Further, due to technological advancements in the industry, there has been a shift to cloud-based products that make use of smartphones and smart home devices. WaterSense might want to consider reevaluating its specification to ensure these products are effectively captured.

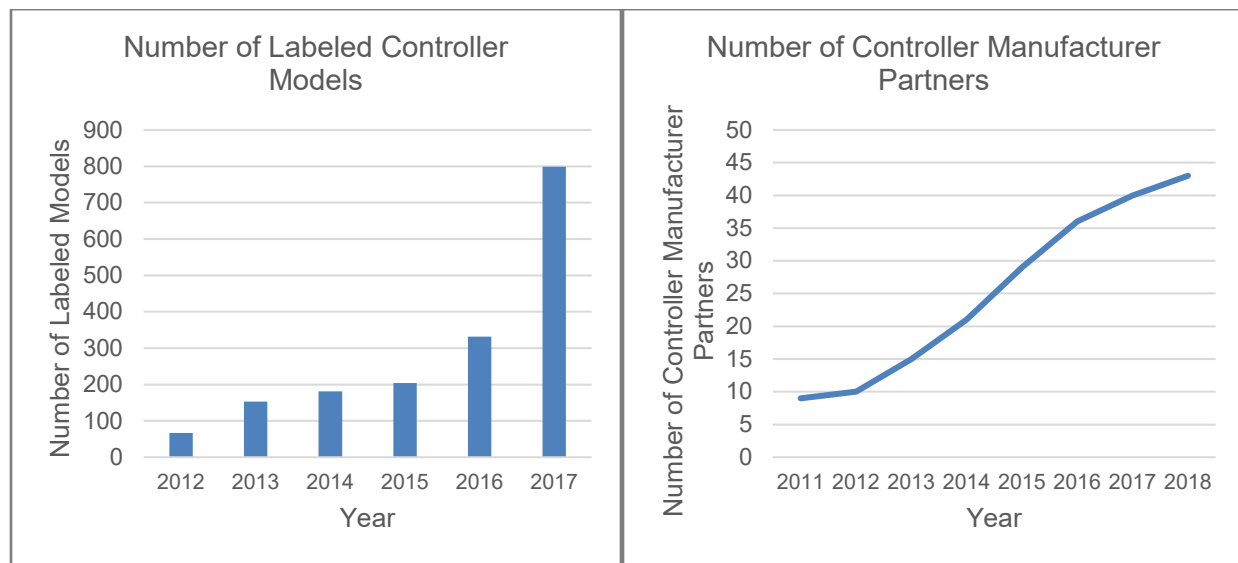


Figure 1. Weather-Based Irrigation Controller Model and Manufacturer Partner Growth Since Initial Specification Release

¹⁷ WaterSense Specification for Weather-Based Irrigation Controllers Supporting Statement.

www.epa.gov/sites/production/files/2017-02/documents/ws-background-controllers-suppstatement.pdf

¹⁸ Definitions for stand-alone controller, plug-in device and add-on device are included in the WaterSense Specification for Weather-Based Irrigation Controllers. <https://www.epa.gov/sites/production/files/2017-01/documents/ws-products-spec-irrigation-controllers.pdf>

WaterSense is exploring several areas related to revising the weather-based irrigation controller specification, including:

- **Changes in the market.** There has been a significant increase in both the number of manufacturers and models of weather-based irrigation controllers since the specification was released in 2011. How does the advent of new technologies in this product category fit within the current scope of this specification or affect how products within this category should be defined?
- **Planned revisions to the underlying test protocol.** The SWAT protocol upon which the performance criteria are based is under revision as part of the standard development process. The American Society of Agricultural and Biological Engineers (ASABE) is currently developing standard *X627 Environmentally Responsive Landscape Irrigation Control Systems*, which, in draft form, incorporates the modifications to the SWAT protocol included in the WaterSense specification, as well as other adjustments to the test protocol. WaterSense is actively participating in this standard development process and will consider adopting it by reference within a revised specification upon its publication.
- **Water savings estimates.** Several comprehensive water savings studies have been published for weather-based irrigation controllers since the EPA released the specification in 2011, suggesting the program's water savings estimates could be updated to be more accurate. WaterSense requests stakeholders provide additional studies addressing water savings from this product category. WaterSense intends to review these studies to determine potential updates necessary to its water savings estimates for weather-based irrigation controllers.
- **Product marking and labeling.** WaterSense has received several inquiries from consumers and utility partners expressing confusion about weather-based irrigation controller packaging. In July 2018, WaterSense issued technical clarifications¹⁹ reiterating its product marking and labeling requirements for weather-based irrigation controllers. However, WaterSense is interested in further investigating whether the definitions and packaging requirements for add-on, plug-in, and stand-alone devices are consistent with the needs and practices in the controller marketplace.

IV. Request for Feedback and Data

Beyond the information, questions, and considerations discussed in each of the product-specific subsections above, WaterSense asks interested stakeholders to consider the following when providing feedback on any of the product categories.

- Beyond market transformation and national water savings, what other considerations should WaterSense include in its decision-making process for specification revision (e.g., stakeholder support, rebate availability)?
- What water efficiency improvements should be made to the WaterSense specification?
- What updates to performance criteria or referenced standards should WaterSense consider incorporating into the specification that would benefit the user experience and ensure long-term water savings?

¹⁹ Compendium of WaterSense Product Specification, Certification, and Labeling Clarifications. www.epa.gov/watersense/product-specifications#pane-4

- What other classes of products or new technologies within the overarching product category should WaterSense consider incorporating into the scope of the specification?
- What new studies or data on water efficiency, performance, or water savings related to these product categories should WaterSense be aware of?
- What unintended consequences could result from increasing water efficiency requirements of a WaterSense specification?

The EPA also plans to consider resources available to the WaterSense program. WaterSense continually prioritizes the development of product specifications, technical materials, outreach campaigns, and other programs based on available resources. The *America's Water Infrastructure Act of 2018* envisions WaterSense as a program “to identify and promote water-efficient products, buildings, landscapes, facilities, processes, and services in order to, through voluntary labeling of, or other forms of communications regarding, such products, buildings, landscapes, facilities, processes, and services while meeting strict performance criteria, sensibly—(A) reduce water use; (B) reduce the strain on public water systems, community water systems, and wastewater and stormwater infrastructure; (C) conserve energy used to pump, heat, transport, and treat water; and (D) preserve water resources for future generations.” Considering this:

- What other categories of products with quantifiable water savings and proven performance should WaterSense consider labeling? Any suggestions should be accompanied with data and information to support inclusion in the program.²⁰

V. Process for Specification Revision, Timeline, and Next Steps

Interested parties can provide input to WaterSense in response to information and questions presented in this *Notice of Potential Specification Revisions* or otherwise related to these product categories as written comment to watersense-products@erg.com by **March 8, 2019**.

All comments, except data claimed as confidential business information (CBI), become a part of the public record. In the case that comments are CBI, they can be submitted as such through EPA's contractor, Eastern Research Group, Inc. (ERG). Sensitive business information can be claimed confidential under 40 CFR Part 2, Subpart B. ERG has an EPA-approved security plan in place to protect CBI from unauthorized disclosure. All data submitted as confidential will be handled as such. CBI should not be submitted electronically but can be submitted as a hardcopy document or on a CD, DVD, or flash drive. Data submitted as CBI will not become a part of the public record unless aggregated and masked to conceal the identity of the submitter.

Data claimed as CBI should be submitted to:
Eastern Research Group, Inc.
Attn: WaterSense Helpline
2300 Wilson Boulevard, Suite 350
Arlington, VA 22201

WaterSense will accept feedback on the information requested above and will consider all comments and information provided by stakeholders and the general public related to these

²⁰ For data needs related to the specification development process, see: www.epa.gov/watersense/why-cant-my-product-get-label

product categories. WaterSense will also review recent studies, such as the Water Research Foundation's *Residential End Uses of Water, Version 2*, and other industry resources to inform its decision-making process. Lastly, WaterSense also plans to hold stakeholder meetings in spring 2019 to discuss the information received as a result of this *Notice of Specification Review*, as well as other information WaterSense has collected through its own market research.

WaterSense intends to summarize information collected as part of this process by the end of 2019. At this point, it will also issue a decision on whether or not to move forward with a specification revision for each product category. If WaterSense determines that a specification revision is not appropriate at this time, there will be no change to the product water efficiency or performance criteria, although minor changes could be considered to clarify marking, labeling or certification issues. If WaterSense determines that a revision would be beneficial for a particular product specification, it will identify existing data gaps, concerns, and next steps related to development of a draft specification. WaterSense will provide opportunity for public comments prior to and following the development of the draft specification, and hold additional stakeholder meetings, as appropriate, before issuing a final specification. Also, consistent with program guidelines and provisions of the *America's Water Infrastructure Act of 2018*, WaterSense will seek to work with appropriate, applicable, and relevant consensus standards as it makes changes to specifications.

If WaterSense decides to revise one or more product specifications, it will also consider revisions to the [WaterSense Product Certification System](#) to establish requirements for manufacturer partners and licensed certifying bodies regarding product certification and labeling during the transition period between specification versions. Draft revisions to the *WaterSense Product Certification System* will be made available for public comments prior to being finalized. The EPA intends to provide an appropriate transition time prior to the applicable effective date of any specification revision.