July 22, 2020

Mr. Andrew Wheeler
Administrator
US Environmental Protection Agency
Washington, DC

RE: Comments on Docket ID No. EPA-HQ-OW-2020-0026
Request for Information on the WaterSense® Program

Dear Administrator Wheeler:

The Alliance for Water Efficiency (AWE) writes to express support for the WaterSense® program, and for the integrity of WaterSense product specifications. AWE is filing two letters to this Docket; this letter pertains specifically to the issue of maintaining showerhead flow rates.

The WaterSense specification for showerheads has been designed to provide the following: improved showerhead performance testing; increased water savings from a lower flow rate than the federal standard; and energy savings resulting from the additional conserved hot water. Since the WaterSense showerhead specification was adopted in 2010, labeled showerheads have provided demonstrated water and energy savings, and will continue to do so into the future due to a transformed market. WaterSense labeled showerheads use 2.0 gallons per minute (gpm) or less, and meet the American Society of Mechanical Engineers testing procedures (ASME A112.18.1/CSA B125.1). The development of the WaterSense showerhead specification has also helped increase the rigor of ASME testing procedures with the addition of spray force and spray coverage test requirements.

The savings achieved by the WaterSense showerhead specification are significant, and both water and energy use have been reduced. But AWE is concerned that there might be a proposal to increase the specification flow rate from the current 2.0 gpm, or even increase the flow rate in the federal standard of 2.5 gpm. To provide some perspective on the importance of the water and energy savings, AWE has analyzed the future impact that might result if showerhead flow rates were raised, using data describing the installed base of showerheads in 2011-2012 from the Residential End Uses of Water Study[1] which has documented actual flow rates in the field. Based on projections for new development and for existing home showerhead replacements, AWE estimates that 2.5 gpm showerheads provide 11 billion gallons per year in water savings and 5 trillion Btu per year in energy savings. Ultra-efficient showerheads (<1.6 gpm) provide 19 billion gallons per year

[1] Residential End Uses of Water Study, 2016 Update. Water Research Foundation.

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in water savings and 9 trillion Btu per year in energy savings. These are significant savings; in ten years the savings for 2.5 gpm showerheads at the federal standard alone accumulate to the equivalent of supplying 1 million homes with water and 670,000 homes with energy.

Thus, AWE strongly supports maintaining the existing federal showerhead flow rate standard and WaterSense showerhead specification at the current levels. The attached memo explains our analysis.

Sincerely,

Mary Ann Dickinson
President and CEO

Analysis of Water and Energy Savings from Showerhead Flow Rates

The Alliance for Water Efficiency (AWE) analyzed the water and energy savings coming from existing showerhead flow rates and possible changes to them. The Federal standard specifies a maximum flow rate of 2.5 gallons per minute (gpm). The WaterSense showerhead specification specifies a maximum flow rate of 2.0 gpm. Our analysis used data describing the installed base of showerheads in 2011-2012 from the Residential End Uses of Water Study,[2] which has documented actual flow rates in the field. Because ultra-efficient showerheads can go as low as 1.5 gpm or lower, the field data from the Residential End Use Study showed an average flow of 1.6 gpm or less for these showerheads. Thus, it is this number that AWE used in the analysis.

AWE estimates that showerheads are installed in slightly more than one million new homes and replaced in approximately 9.7 million existing homes each year, or a total of 10.8 million homes. These estimates are based on the following:

- New homes: Slightly more than one million occupied housing units are added to the United States housing stock annually.[3]

- Existing homes: The annual replacement rate of showerheads has been estimated to range from 5% to 10% (California Energy Commission, 2015). Currently, there are approximately 122 million occupied housing units in the United States.[4] Assuming an average of 2 showerheads per housing unit, there are approximately 244 million installed showerheads, of which between 12 and 24 million are replaced each year. This is equivalent to showerhead replacement in 6 to 12 million homes each year. For this analysis, we use the midpoint of the range, or 9.7 million homes.

Table 1 shows the national-level estimates of water and energy savings, assuming existing and new homes installing showerheads were fitted with either efficient or ultra-efficient showerheads. Water savings are 11 billion gallons for efficient showerheads and 19 billion gallons for ultra-efficient showerheads. Energy savings are 5 trillion Btu for efficient showerheads and 9 trillion Btu for ultra-efficient showerheads. For a sense of magnitude of this savings, it is enough water to serve between 100,000 and 171,000 homes and enough energy to serve between 67,000 and 115,000 homes.[5]

Table 2 shows the national-level estimates of cumulative water and energy savings assuming existing and new homes installing showerheads were fitted with either efficient or ultra-efficient showerheads.

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[2] Residential End Uses of Water Study, 2016 Update. Water Research Foundation.

[3] Based on U.S. Census, American Community Survey, 2013-2018 1-year occupied housing unit estimates (data.census.gov, Table DP04).

[4] Ibid.

[5] According to EPA and the U.S. Energy Information Administration, the typical home in the United States uses approximately 110,000 gallons of water and 77.1 million Btu annually.

Table 3 shows the number of homes that could be served by these savings. After 5 years, water savings would be sufficient to serve between 500,000 and 855,000 homes and energy savings would be sufficient to serve between 335,000 and 575,000 homes. After 10 years, water savings would be sufficient to serve between 1,000,000 and 1,710,000 homes and energy savings would be sufficient to serve between 670,000 and 1,150,000.

Table 1. National-Level Estimate of Annual Water and Energy Savings for Efficient and Ultra-Efficient Showerheads

Showerhead Efficiency	**Water Savings (Billion Gallons)**	**Energy Savings (Trillion Btu)**
Efficient Showerhead Retrofit (flow rate < 2.5 gpm)	11	5
Ultra-efficient Showerhead Retrofit (flow rate < 1.6 gpm)	19	9

Table 2. National-Level Estimate of Cumulative Annual Water and Energy Savings for Efficient and Ultra-Efficient Showerheads

	Annual Water Savings (Billion Gallons)		**Annual Energy Savings (Trillion Btu)**	
Showerhead	**Efficient**	**Ultra-Efficient**	**Efficient**	**Ultra-Efficient**
After 1 year	11	19	5	9
After 5 years	55	95	25	45
After 10 years	110	190	50	90

Table 3. National-Level Estimate of Savings in terms of Number of Homes

	Number of homes that could be served by water savings		**Number of homes that could be served by energy savings**	
Showerhead	**Efficient**	**Ultra-Efficient**	**Efficient**	**Ultra-Efficient**
After 1 year	100,000	171,000	67,000	115,000
After 5 years	500,000	855,000	335,000	575,000
After 10 years	1,000,000	1,710,000	670,000	1,150,000