DOCKETED

Docket Number:	17-AAER-09
Project Title:	Tub Spout Diverters
TN #:	219124
Document Title:	EPA WaterSense Comments on Tub Spout Diverters
Description:	N/A
Filer:	System
Organization:	Stephanie Tanner, EPA WaterSense
Submitter Role:	Public Agency
Submission Date:	6/16/2017 10:32:04 AM
Docketed Date:	6/16/2017

Comment Received From: Stephanie Tanner, EPA WaterSense
Submitted On: 6/16/2017
Docket Number: 17-AAER-09

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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-09 – Tub Spout Diverters

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 is to provide the CEC with research EPA has conducted and publicly available data 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 end consumers with clear and consistent information.** Product efficiency and performance will be easily comparable across states, regions, and the country.

WaterSense is currently developing a specification for bath and shower diverters. WaterSense anticipates releasing its draft specification for this product category this summer and hopes to release its final specification by the end of the calendar year. The comments below highlight WaterSense's 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 Tub Spout Diverters

General

WaterSense's research to date on Bath and Shower Diverters is compiled in WaterSense's *Notice of Intent (NOI) to Develop a Draft Specification for Bath and Shower Diverters* (www.epa.gov/watersense/bath-and-shower-diverters). WaterSense agrees with CEC's proposal to adopt the test methodology included in ASME A112.18.1/CSA B125.1 for this product category.

Except for bath and shower diverter leakage data collected at Fort Carson, all sources cited in the NOI are publicly available. Data collected from Fort Carson is included in Appendix A.

WaterSense has obtained additional information through stakeholder comments received on the NOI. EPA has summarized these comments below for CEC's consideration.

Scope and Definitions

WaterSense intends to revise the definition of tub-to-shower diverter to instead be "a diverter mechanism that is embedded in the plumbing." This change is based on stakeholder comments that tub-to-shower diverters (also known as valve-type diverters) are not necessarily concealed by the shower wall.

Based on additional research conducted by WaterSense, EPA also anticipates that a bath and shower diverter specification will include other bath and shower product configurations that include a diverter, such as Roman tub faucets and clawfoot tub faucets.

Existing Standards

Multiple stakeholders provided comments to WaterSense indicating that automatic reset diverters require a small amount of leakage to automatically reset following a shower event. However, WaterSense received no data that identified the required leakage volume. Through discussions with multiple testing laboratories, WaterSense concluded that most "lift-type" diverters and many "pull-type" diverters are characterized as automatic reset diverters, although this feature is not frequently marketed. WaterSense reviewed the CEC's Modernized Appliance Efficiency Database System (MAEDBS), most recently in April 2017, to identify the prevalence of lift- and pull-type models that were listed as having a pre- and post-life cycle flow rate listed at 0.00 gpm. Approximately 30 percent of the 1,948 lift-type models reviewed and 40 percent of the 225 pull-type models reviewed were capable of achieving 0.00 gpm before and after life cycle testing. According to the testing laboratories WaterSense spoke with, the two decimal point level of precision allows a small amount of leakage (up to 0.005 gpm) that could ensure the automatic rest function is maintained.

Because it is unclear whether all the lift and pull type diverters reset automatically and what leakage rate is required to maintain the reset function, more research could be useful. WaterSense would be interested in the result of such research, if conducted.

Maintenance, Operation, and Function

CEC requested data on shower duration and frequency in its Invitation to Participate Phase 2 Pre-Rulemaking. WaterSense utilized data presented in the Residential End Uses of Water, Version 2, published by the Water Research Foundation, to estimate shower frequency and duration. According to this study, the average duration of a shower is 7.8 minutes. The typical number of showers per capita per day is 0.70 showers per person per day. CEC may want to consider this information in its pre-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

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

Sincerely,

EPA WaterSense
(866) WTR-SENS (987-7367)
www.epa.gov/watersense

Appendix A: Bath and shower diverter leak rate data, collected by Johnson Controls, Inc.
in support of Fort Carson energy savings performance contract

Bldg 1664	Gal/Min	Average Gal/Min
203	0.5	
216	0.125	
212	0.125	
Total	0.75	**0.250**
Bldg 1663		
112	0.235	
115	0.04	
118	0.14	
	0.415	**0.138**
Bldg 1043		
102	0.078	
111	0.125	
116	0.25	
210	0.28	
Total	0.733	**0.183**
Bldg 1044		
108	0.25	
105	0.25	
221	0.125	
202	0.25	
209	0.125	
Total	1	**0.250**
Bldg 1046		
103	0.125	
107	0.25	
207	0.5	
202	0.3125	
303	0.125	
311	0.25	
Total	1.5625	**0.260**
Bldg 2071		
D102	0.3125	
C104	0.47	
C103	0.55	
D102	0.9375	
D202	1.4	
C203	0.9375	
C204	0.46875	
D301	0.78125	
	5.8575	**0.732**

Bldg 2072	Gal/Min	Average Gal/Min
A302	1.09375	
A301	0.9375	
A103	0.0469	
A104	0	
B101	1.78125	
B102	0.015625	
A204	0.28125	
B202	0.9375	
B201	0.15625	
Total	5.250025	**0.583**
Bldg 2073		
B303	0.0625	
B304	0.25	
C202	0.3125	
A202	0.25	
A201	0.625	
B101	0.3125	
A203	0.9375	
B201	0.25	
C102	0.65625	
C101	1.9513	
B103	2.1875	
B204	1.25	
B203	1.28125	
C201	0.46875	
Total	10.79505	**0.771**
Bldg 2074		
B203	0.78125	
B204	0.9375	
B303	1.59375	
B304	0.78125	
C101	1.40625	
C104	1.59375	
C201	1.40625	
C202	1.40625	
C301	0.46875	
C302	0.34375	
Total	10.71875	**1.072**

Bldg 2150	Gal/Min	Average Gal/Min
A103	0.53125	
A104	0.9375	
A203	1.25	
A204	0.625	
A303	2.03125	
A304	2.51563	
B101	0.75	
B102	0.46875	
B201	0.65625	
B202	2.46875	
B301	0.65625	
B302	0.25	
D303	1.28125	
Total	14.42188	**1.109**
Bldg 2151		
A202	0.46875	
A302	1.40625	
C104	0.46875	
D102	0.46875	
D103	0.78125	
D204	0.53125	
D303	2.1875	
Total	6.3125	**0.902**

Number of Diverters Tested	82
Average Diverter Leak Rate	0.705 gpm