



June 6, 2014

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 14-AAER-1
1516 Ninth Street
Sacramento, CA 95814-5512

California Energy Commission

DOCKETED

14-AAER-1

TN 73143

JUN 06 2014

RE: CEC DOCKET NO. 14-AAER-1, APPLIANCE EFFICIENCY PRE-RULEMAKING

The East Bay Municipal Utility District (EBMUD) is a publicly-owned utility supplying water and providing wastewater treatment for approximately 1.4 million people in the East San Francisco Bay Area. Thank you for this opportunity to comment on the CEC's Water Appliance Efficiency program related to the subject docket. EBMUD is overall supportive of the CEC staff recommendation for the proposed faucet, toilet, and urinal rulemaking under the subject docket.

EBMUD supports collective efforts to address California's water supply reliability goals, especially in response to the current drought. We have reviewed both the CEC staff report and the CASE team recommendations from the California Investor Owned Utilities (IOU's) and offer the following comments in support of our concurrence with the CEC staff recommendations.

We are encouraged by ongoing product and market innovation and support ongoing water efficiency research efforts to further identify future water savings opportunities. We believe that going forward, it remains vitally important to consider plumbing system performance metrics when considering new standards that include field investigation, field-verified needs assessment, and consumer feedback to avoid potentially costly and serious unintended consequences.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard W. Harris', is written over a horizontal line.

Richard W. Harris
Manager of Water Conservation

RH:ldb

General Comments

EBMUD supports the CEC staff report and recommends the maximum water consumption thresholds specified in AB715, SB 407 and CalGreen be incorporated into the CEC Title 20 requirements. These levels have been comprehensively analyzed and vetted through industry and stakeholder-supported research among standards organizations, water utilities, regulators, and manufacturers over the last several years. Additionally, as listed below, these levels have been incorporated into the two key national standards (both ANSI approved standards) and the three U.S. EPA WaterSense specifications with the participation and deliberation of this broad range of state, national and international stakeholders.

- ASME A112.18.1-2012/CSA B125.1-12 – Plumbing Supply Fittings (Faucets)
- ASME A112.19.2-2013/CSA B45.1-13 – Ceramic Plumbing Fixtures (Toilets and Urinals)
- WaterSense Specification for Tank-Type Toilets, version 1.1, May 20, 2011
- WaterSense Specification for Flushing Urinals, version 1.0, August 14, 2009
- WaterSense High-Efficiency Lavatory Faucet Specification, version 1.0, October 1, 2007

Those maximum consumption thresholds are as follows:

- Water Closets – 1.28 gpf
- Urinals – 0.5 gpf
- Lavatory Faucets (residential) – 1.5 gpm (minimum of 0.8 gpm)

These requirements are consistent with critical industry standards and the WaterSense specifications for plumbing products. Even more importantly, products manufactured to these efficiency levels have been proven to deliver excellent performance and consumer satisfaction.

EBMUD also supports the CEC Staff recommendations for the following products:

- Kitchen faucets – 1.8 gpm maximum @ 60 psi with an allowable 2.2 gpm maximum override for pot filling; and
- Commercial lavatory faucets – 0.5 gpm maximum @ 60 psi.

Maximum Urinal Flush Volume

EBMUD recommends the CEC adopt the urinal specification thresholds in CalGreen and AB715, both of which have one urinal category at 0.5 gpf. Also, the U.S. EPA WaterSense labeling program for urinals sets the maximum consumption threshold at 0.5 gpf for this voluntary, performance-based, third-party certification program. The 0.5 gpf level is the benchmark for today's high-efficiency urinals and many models are available in a variety of design choices in wall- and floor-mount configurations. EBMUD recommends consideration of 0.125 gpf urinals be deferred for at least three years to allow sufficient time for additional field experience, including drain line research to provide needed insight regarding the efficacy of that consumption level within overall plumbing system configurations. When sufficient data and field experience becomes available, EBMUD encourages the CEC to reconsider the 0.125 gpf

threshold in its future rulemaking. We offer the following comments in support of this recommendation:

- The national standard for flushing urinal fixtures sets the maximum flush volume at 1.0 gallons, a flush volume that has existed in the U.S. for about 20 years. California, which represents at least 10 percent of the national market only recently lowered that maximum to 0.5 gallons per flush (gpf) and permanently eliminated the availability of 1.0 gpf urinals on January 1, 2014 (AB715). Other jurisdictions (e.g., Texas, Colorado, Georgia, and New York City) have done likewise. In response, the plumbing industry has aggressively developed new product and implemented new production processes to meet this obvious trend to 0.5 gpf urinals. California's current 0.5 gpf threshold has been in place for less than six months. The plumbing industry is responding by producing product that operates at that threshold.
- Urinals flushing at 0.125 gpf were introduced to the marketplace in 2006. Response was initially tepid and the marketplace had limited product availability until 2010 when product selection was sufficient to gain market attention. Today, there are only 77 models of 0.125 gpf urinals certified to the WaterSense specification.
- Drain line blockages (due to a buildup of struvite) and installation problems related to odors have been associated with some non-water consuming urinal installations. The model plumbing and green codes addressed these two significant issues by requiring that water supply lines be installed behind the walls in washrooms to facilitate replacement of non-water consuming urinals in the event building owners chose to replace them with flushing urinals. There has been insufficient experience with 0.125 gpf urinals to date to assess the magnitude of concerns that may or may not result in similar drain line issues associated with non-water consuming urinals. It remains to be determined and more data and time is needed to be more certain if 0.125 gpf is adequate to remove such concerns. Our utility has some, yet little experience with these lower flushing urinals and we are collecting more field data to ascertain the overall cost, performance and consumer satisfaction with these models.
- While 0.125 gpf urinals may be suited to new construction where new drain line systems are designed specifically to handle extremely low water flows from fixtures and other equipment, their feasibility in retrofit situations in existing buildings is still not well understood and may be questionable. Whereas a 1.0 gpf urinal can usually be successfully retrofitted to 0.5 gpf by installing a new flushometer valve or by changing valve components and without requiring replacement of the urinal fixture itself, this is typically not the case for a retrofit from 1.0 gpf to 0.125 gpf because of the physical limitations with the urinal fixture. In such an instance, both the valve and the urinal fixture would require replacement, which is costly due to labor costs, possibly wall repair, and the purchase of the urinal system components themselves.

Maximum Residential Lavatory Faucet Consumption Level

EBMUD concurs with the CEC staff proposal and recommends the CEC follow the WaterSense lead and rely upon the specification, testing, and certifications of that program to set the Title 20 threshold. EBMUD is not supportive of the CASE/ IOU proposal for the following concerns:

- The IOU-proposed maximum lavatory flow rate of 1.0 gallon per minute (gpm) is contrary to the current CalGreen code levels that went into effect on January 1, 2011 and the WaterSense specification, both of which set the maximum at 1.5 gpm. This proposal to further reduce the maximum flow rate is based on estimated water, energy, and carbon savings that appears to be founded on limited technical and economic information. The estimated level of savings assumes that consumers always operate their faucets at full flow. EBMUD and numerous end use studies suggest end users operate their faucets over a broad range of flow volumes which would reduce the estimated savings potential. There have been other concerns and unintended consequences raised on potential negative health, safety, or sanitation impacts.
- The WaterSense specification was developed in consultation with a wide variety of stakeholders, including manufacturers, water efficiency advocates, hot water distribution specialists, and water utilities.
- By virtue a reduction in faucet flow rates, (i.e. 33 percent reduction) there could very likely be a corresponding increase in hot water wait times for users, thereby erasing some water savings and lower consumer satisfaction levels
- As of May 2014, there are 7,437 residential lavatory faucet models certified to the WaterSense specification. Under the current ISO/IEC 17065 requirements within Version 2.0 of the WaterSense Product Certification System, all of these faucets would be required to undergo re-testing and recertification at a great cost to manufacturers and, ultimately, to consumers.

Minimum Maximum Performance (MaP) Score for Toilets

EBMUD supports the CEC staff proposal of a minimum MaP score of 350 grams which is consistent with the current WaterSense and national standard. EBMUD is concerned with increasing the minimum MaP performance threshold for toilets to 600 grams for the following reasons:

- EBMUD is one of the utilities that supported original Map testing of toilet fixtures in 2003 under a fully voluntary program with the funding support of 22 interested water utilities and related organizations in the U.S. and Canada. In addition to encouraging the production of more efficient products, its purpose was also to provide water utilities, consumers, and design professionals with the information necessary to make the purchase and specification decisions based upon flush performance data for bulk waste. The MaP protocol is a 'test to failure' using specific test media chosen to represent and replicate bulk waste. Subsequent to MaP introduction in 2003, the test protocol and the minimum performance threshold of 350 grams was adopted by the U.S. EPA's WaterSense program for their tank-type toilet specification. In 2013, the same protocol and threshold was added to the ANSI standard for toilets, ASME A112.19.2-2013/CSA B45.1-13.
- The CASE/IOU document makes two misrepresentations that form the basis for their analysis: (a) consumers are dissatisfied with toilet flushing performance because of the

need for double flushing; and (b) double flushing can be eliminated by increasing the minimum MaP score to 600 grams.

- (a) No evidence has been provided in the CASE/IOU report (or elsewhere) that shows double flushing of toilets currently meeting the 350 gram minimum bulk media removal requirement is a ‘real world’ problem. Quite to the contrary, consumer feedback on our own EBMUD high-efficiency toilet programs, along with manufacturers, water utilities, and water efficiency professionals on WaterSense-listed toilets has demonstrated overwhelming user satisfaction.
- (b) The presumption that a toilet that meets a 600 gram minimum requirement will require less double flushing than a toilet that meets a 350 gram requirement does not recognize the four primary causes of user double flushing:
 1. remove bulk (solid) waste remaining in the bowl,
 2. remove waste marks left on the bowl,
 3. remove toilet paper adhered to the walls of the bowl above the water level, and
 4. remove “slurry” of waste left behind because of inadequate water exchange.

Based upon the findings of a 1999 customer satisfaction study undertaken by the Metropolitan Water District of Southern California, we can also identify the occurrence of each of these causes of double flushing (before MaP). The current national standard (ASME A112.19.2-2013/CSA B45.1-13) contains specific test protocols for all four and establishes minimum performance requirements for each. MaP tests for bulk waste removal only. Table 1 displays the distribution of the causes and the applicable test elements of the standard.

Table 1. Double flushing and testing

Causes of user double flushing	Percentage occurrence (1999)	ANSI National Standard tests (ASME A112.19.2-2013/CSA B45.1-13)		MaP tests for?
		Sections	Title	
1. Bulk waste remaining (sinking)	21%	7.7 & 7.10	Mixed media test. Waste extraction test (350g).	Yes
2. Waste marks on side of bowl	47%	7.6	Surface wash test	No
3. Paper adhered to side of bowl				No
4. ‘Slurry’ waste remaining (floating & sinking)	32%	7.5	Granule and ball test	No

Increasing the minimum requirement to 600 grams does not fully address the double flushing issues associated with items 2, 3, and 4 in the table above. Additionally, manufacturers could be required to divert more water away from rim punchings (which help clean the bowl) to ensure increased bulk removal capability, which could further undermine the proposed additional savings. As the maximum toilet flush volume for toilets sold and installed in California decreased from 1.6 gpf to 1.28 gpf on January 1, 2014, the effect of such a diversion is magnified. As of May 6, 2014, a total of 2,087 individual toilet models were certified to the WaterSense specification. Of these 2,087 models, 886 (42 percent) had not been shown to achieve a 600 gram

MaP threshold. These products compete in the marketplace and meet consumer expectations. If implemented today, the 600 gram threshold would result in unintended consequences by removing qualified products from the California marketplace, thereby adversely impacting consumer choice and likely cost.

- Unlike self-certification, the WaterSense program requires independent third-party testing and certification of toilets (and other products) to the applicable specification. If the 600 gram threshold was implemented, manufacturers would be required to retest all 2,087 toilet models to the new threshold at great cost in order to be sold in California. Under the current ISO/IEC 17065 requirements within Version 2.0 of the WaterSense Product Certification System, every such model must be re-certified through a WaterSense-approved certifying body, and re-listed in accordance with the System provisions. Based upon the current costs of testing, certification, and listing (conservatively estimated at \$1,000 per model), the total obligation could amount to over \$2 million, without any assurance of actual water or energy savings. We consider this to be a significant and unnecessary cost of money and other resources.
- Setting an arbitrarily high minimum performance level could significantly harm the industry's chances of moving to even lower flush volumes, i.e., lower than 1.28 gpf. While it may be possible for manufacturers to develop hundreds of models that flush with only 1.0 gallon or less while clearing 350g, it may be very difficult to achieve greater water efficiency if the minimum is set at 600g. This would be a step back in the advancement of water efficiency.

Concluding Remarks

EBMUD recommends the CEC process for water closets (toilets), urinals, and lavatory faucets rely upon the WaterSense certification and listing process for all three of the products discussed here. This action would result in substantial water savings and save significant funds for various parties by removing the requirement for manufacturers to submit 'paperwork' to the CEC that is duplicative of what they already submit to WaterSense and certifying bodies in the normal course of business.