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WaterSense®

Notice of Intent to Develop a Draft Specification for Flushometer-Valve Toilets

Public Meeting
September 12, 2013

Housekeeping

All participants will be muted until called upon

- Press *6 to unmute your line. When finished speaking, press *6 to mute your line.

Do not place the call on hold

- If you need to take a call, please disconnect from the conference line and call back when you are finished

Ask questions between sections or type your name in the 'question' box to the right to be called on

This meeting is meant to be an open discussion. All questions, comments, and concerns are welcome!

Meeting Agenda

- Introduction to WaterSense
- Flushometer-Valve Toilets Background
- Notice of Intent (NOI) for Flushometer-Valve Toilets
 - Scope
 - Water Efficiency
 - Performance
 - Certification and Labeling
 - Product Testing
 - Marking and Product Documentation
- Summary of Comments Received and Outstanding Issues





Part 1

INTRODUCTION AND BACKGROUND

WaterSense Background and Product Evaluation Factors

- WaterSense is a voluntary partnership and labeling program launched by EPA in 2006 designed to reduce municipal water use across the country.
- WaterSense uses the following factors in determining which products to label
- **Product must:**
 - Offer equivalent or superior performance
 - Be about 20 percent more water-efficient than conventional models
 - Realize water savings on a national level
 - Provide measurable results
 - Achieve water efficiency through several technology options
 - Be effectively differentiated by the WaterSense label
 - Be independently certified

Flushometer-Valve Toilets Background

- Flushometer-valve toilets are tankless fixtures comprised of a wall- or floor-mounted bowl attached to a flushometer valve.
 - The flushometer valve is activated by a lever, pedal, handle, or electronic sensor.
 - The flushometer valve then releases a specific volume of water from a pressurized line to the bowl.
- Flushometer-valve toilets are typically found in commercial, industrial, and other public restrooms.
- It is estimated that approximately 26 million flushometer-valve toilets are installed in the U.S.

Flushometer-Valve Toilets Background (cont.)

- Energy Policy Act (EPAct) 1992 set the maximum flush volume of 1.6 gpf (6.0 lpf).
 - Many older, pre-EPAct models flush as much as 3 to 7 gpf.
- High efficiency models flush at 1.28 gpf (4.8 lpf) or less.
 - Approximately 56 billion gallons of water could be saved annually by replacing all existing flushometer valve toilets with high-efficiency models.



Part 2

SCOPE

Scope Considerations

- Flushometer-valve toilets are made up of a flushometer valve and toilet bowl.
- Both play an integral role in ensuring efficiency and effectiveness.
 - Flushometer valve— A valve attached to a pressurized water supply pipe, designed so that when actuated, opens the line for direct flow into the fixture at a rate and quantity to properly operate the fixture and then gradually close in order to avoid water hammer.
 - Bowl— A device that receives water, waste matter, or both and directs these substances to the drainage system.

Scope for Draft Specification

- Because the flushometer valve and bowl are both needed for a fully functioning toilet, the specification will apply to both components.
- Dual-flush flushometer-valve toilets will also be included in the specification
- WaterSense intends to exclude retrofit devices and other aftermarket retrofit systems from the scope of the draft.



Scope Questions/Discussion

- Questions/Discussion?



Part 3

WATER EFFICIENCY

Proposed Water Efficiency Criteria

- WaterSense is considering setting a maximum “rated” flush volume of 1.28 gpf (4.8 Lpf)
 - Reduces flush volume by 20% over the federal maximum
 - Matches currently accepted industry standards for high-efficiency toilets (HETs)
 - Consistent with *WaterSense Specification for Tank-Type Toilets*
 - 258 high-efficiency flushometer-valve toilet combinations have been tested to Maximum Performance (MaP) testing requirements

Support from the PERC Study

- Plumbing Efficiency Research Coalition (PERC) published a drainline carry study in November 2012.
- Investigated waste transport through drainline lengths up to 135 feet for flush volumes varying from 0.8 gallons to 1.6 gallons.
- Media were successfully cleared from drainline apparatus for all 1.28 gallon test runs.
- Based on these results, PERC supports a WaterSense specification for flushometer-valve toilets with a maximum flush volume of 1.28 gpf.

Dual-Flush Toilets Water Efficiency

- WaterSense is considering setting a maximum flush volume of 1.28 gallons (4.8 Liters) for the full flush of a dual-flush flushometer-valve toilet.
 - Guarantees target water savings of at least 20% over standard models.
 - Water savings from dual flush toilets with a 1.6 gpf maximum is undocumented and largely dependent on user behavior.
 - Dual-flush water savings are typically limited to women's restrooms.
 - Eliminates need to calculate the “effective” flush volume.

Water Efficiency Questions/Discussion

Questions/Discussion:

- Comments on the proposal to set the maximum flush volume for dual-flush flushometer-valve toilets at 1.28 gallons?



Part 4

PERFORMANCE

General Performance Requirements

- **Toilet Fixture**
 - Vitreous China Fixtures– ASME A112.19.2/CSA B45.1 (*Ceramic Plumbing Fixtures*)
 - Plastic Fixtures– ANSI Z124.4 (*Plastic Water Closet Bowls and Tanks*)
 - Stainless Steel Fixtures– ASME A112.19.3/CSA B45.4 (*Stainless Steel Plumbing Fixtures*)
- **Dual-Flush Toilet Fixture**
 - ASME A112.19.14-2006 (*Six-Liter Water Closets Equipped with a Dual Flushing Device*)
- **Flushometer Valve**
 - ASSE Standard #1037 (*Performance Requirements for Pressurized Flushing Devices [Flushometer] for Plumbing Fixtures*)

Performance Criteria: Non-Hold Open Actuator

- WaterSense intends to include a requirement that the flushometer valve must not exceed the rated flush volume of water, even if the primary actuator is maintained in the flush position.
 - Flushometer valve's primary actuator must be a “non-hold open” design.
- Consistent with *WaterSense Specification for Flushing Urinals*

Performance Criteria: Adjustability

- WaterSense is considering limiting flush volume adjustability that is integrated within the flushometer valve design.
- In the *WaterSense Specification for Flushing Urinals*:
 - The flushing device must not contain a flush volume adjustment that allows the flush volume to vary by more than 0.1 gpf (0.4 lpf) of the rated flush volume.
 - Manufacturers are also not allowed to provide instructions directing users to an alternative flush volume setting that would override the rated flush volume.

Adjustability Considerations

- There are products on the market that have an integrated adjustability to assist in maintenance and operation of toilets and plumbing systems.
 - Remote sensors that can electronically alter flush volumes
 - Products that allow a periodic higher volume clearing flush
- These products can potentially be marketed or used in a way to permanently increase the flush volume so that they no longer meet the WaterSense specification.

Adjustability Considerations (cont.)

Questions/Discussion:

- How should WaterSense specify the adjustability tolerance?
- Should valves with built in adjustability (accessible directly or through the use of aftermarket devices) be able to earn the WaterSense label?
- If so, how can WaterSense ensure longevity of water savings?

Performance Criteria: Interchangeability

- WaterSense is considering a requiring manufacturers to attest that the flushometer valves does not contain interchangeable parts that would allow the flush volume to be greater than its original rated flush volume (e.g., interchangeable diaphragms and pistons).
 - Consistent with *WaterSense Specification for Flushing Urinals*

Performance Criteria: Interchangeability (cont.)

- To help facilitate matching replacement parts in the field, WaterSense is considering requiring the rated flush volume to be marked on the body of the flushometer valve.
- Product O&M documentation must clearly identify replacement parts to maintain water efficiency.
- Manufacturers cannot provide instructions or advertise the use of replacement parts that would override the rated flush volume.

Interchangeability Questions/Discussion

Questions/Discussion:

- Is the proposed requirement for manufacturers to attest non-interchangeability of parts sufficient to address the concerns and ensure long-term water savings associated with these products?
- Any questions or comments on the requirement to mark the rated flush volume on the flushometer valve?

Testing Media: Cased vs. Uncased

- WaterSense intends to specify that uncased testing media (soybean paste) be used in a performance testing.
 - Consistent with the *WaterSense Specification for Tank-Type Toilets*.
- Questions/Discussion?

Performance Criteria: Additional Performance Requirements

- The recently revised ASME A112.19.2/CSA B45.1 standard applies the flush performance requirements from the *WaterSense Specification for Tank-Type Toilets* to all toilets.
 - Must clear 350g of test media and 4 loose balls of toilet paper.
- WaterSense is considering additional performance testing to reflect harsher conditions encountered in commercial and public restrooms.
- **Additional Waste Media Considerations:**
 - Additional soybean paste test media
 - Additional toilet paper
 - Seat covers
 - Paper towels
 - 'Flushable' wipes
 - Sanitary napkins



Additional Performance Requirements Questions/Discussion



Questions/Discussion:

- What additional wastes and/or waste quantities should be considered to account for harsher conditions seen in public and commercial restrooms?



Part 5

CERTIFICATION, LABELING, AND TESTING

Product Certification and Labeling

- **WaterSense is considering certifying and labeling flushometer valves and toilet bowls separately.**
 - Consistent with certification and labeling scheme of Flushing Urinals.
 - Consistent with how products are marketed and sold.
 - Easier for specifiers and facility managers to find a labeled toilet. They will be able to look for two labeled components rather than matching compatible model numbers.
 - Recent studies on product mixing and matching studies indicate performance isn't an issue, at least for 1.6 gpf toilets.
 - MaP has verified performance of hundreds of valve and toilet combinations.

Product Testing

- If flushometer valves and bowls will be certified separately, WaterSense must determine how products will be tested to ensure water efficiency and effective performance.
 - Under ASME A112.19.2/CSA B45.1, bowl fixtures are tested with only one (1) flushometer valve sample, which is either submitted by the bowl manufacturer or a standard valve on site at the testing facility.
 - Under ASSE Standard #1037, flushometer valves are tested with three (3) representative bowls from different manufactures.

Product Testing (cont.)

- **WaterSense requests input on how flushometer valves and toilet bowls should be tested.**
 - Option A: Test products consistent with their currently applicable standards (ASME A112.19.2/CSA B45.1 for toilet bowls; ASSE Standard #1037 for flushometer valves).
 - Option B: Require both flushometer valves and bowls to be tested with representative counterparts from three (3) different manufacturers.
 - Option C: Test bowls and valves independently. Identify the “minimum flush curve” for acceptable performance. Test bowls with a simulated flush and compare flushometer valve flush to minimum flush curve.

Product Testing (cont.)

- WaterSense is also considering requiring manufacturers to provide three (3) samples of the fixture model or flush valve to be tested.
 - Consistent with the *WaterSense Specification for Flushing Urinals*
 - Consistent with ASSE Standard #1037
 - The LCB then chooses one (1) of these at random for testing.

Certification, Labeling, and Testing Questions/Discussion



Questions/Discussion:

- What testing option should WaterSense pursue to ensure performance of both bowls and valves without testing combinations?
- Is there uncertainty in performance from mixing and matching 1.28 gpf flushometer valves and bowls tested with greater loads?



Part 6

MARKING AND PRODUCT DOCUMENTATION

Fixture Marking Considerations

- Manufacturers are marking bowls that are compatible with multiple flush volumes.
 - Prior to its revision, ASME A112.19.2-2008/CSA 45.1-08 required bowls to be marked with their maximum rated flush volume, typically 1.6 gpf.
- This practice may cause confusion to the purchaser or user who thinks they are using a WaterSense labeled toilet
- Therefore, WaterSense is considering requiring bowls to be marked in a way to indicate compatibility with a range of flush volumes.
 - As long as the bowl has been tested to meet the performance requirements of the specification and the required flush volume (e.g., 1.28 gpf) falls somewhere within the range of rated flushes, it can obtain the label.

Fixture Marking Considerations (cont.)

- Recent revisions to ASME A112.19.2/CSA 45.1 allow toilet fixtures that are compatible with multiple flush volumes to be marked with one of the following options:
 - Option 1: Listing the maximum rated flush volume and the words “or less” (e.g., 1.6 gpf or less)
 - Option 2: Using a dual consumption marking (e.g., 1.28 gpf or 1.6 gpf)
 - Option 3: Using a consumption range (e.g., 1.1 gpf to 1.6 gpf)
- WaterSense agrees with this change, but is considering disallowing the use of Option 1.
 - The phrasing “or less” can cause confusion and lead consumers to believe the fixture will function at ALL volumes less than the rated flush volume.

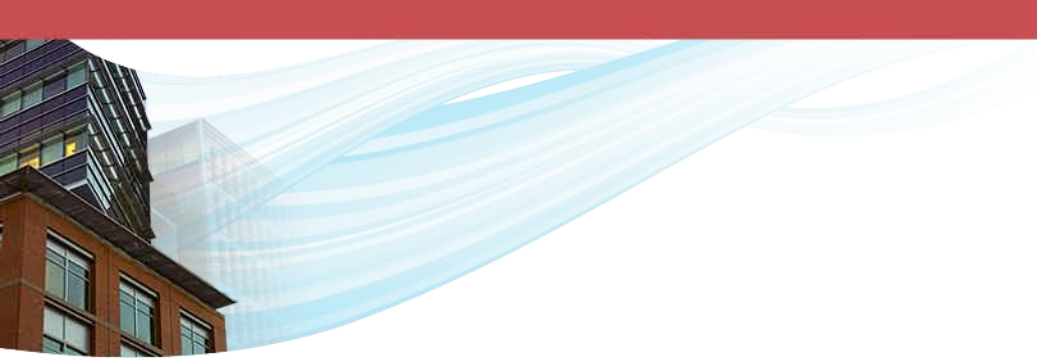
Valve Marking Considerations

- WaterSense is considering requiring the rated flush volume of the flushometer valve to be marked on the body of the valve.
 - Allowing a range of flush volumes to be labeled on bowls may inadvertently lead to use of incorrect flushometer-valves inserts during maintenance.
- This will help maintenance personnel easily identify the correct flush valve inserts to order without relying on the toilet bowl marking for guidance.

Marking and Product Documentation Questions/Discussion

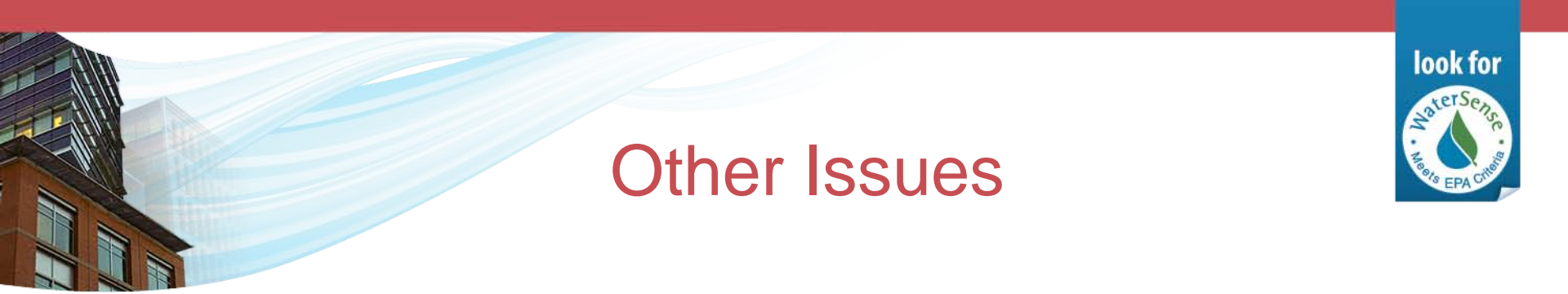
Questions/Discussion:

- Should WaterSense allow bowls to be marked in a way that indicates compatibility with a range of flush volumes?
- Is ensuring that the flush volume compatibility range clearly includes the rated flush volume (e.g., 1.28 gpf to 1.6 gpf) sufficiently clear?



Part 7

OTHER ISSUES AND NEXT STEPS



Other Issues

- Any additional questions, comments, or concerns?

Next Steps

- Submit written comments to watersense-products@erg.com
- EPA will decide based on stakeholder input whether additional research or meetings are necessary to move forward with a specification
- EPA will make public the comments received during on the NOI once it moves forward with developing a draft specification
- Draft specification issued after evaluation of public comments and research needs



More Information



General E-mail: watersense@epa.gov

E-mail for Comment Submissions: watersense-products@erg.com

Web site: www.epa.gov/watersense

Helpline: (866) WTR-SENS (987-7367)