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WaterSense®

Flushing Out Concerns with High-Efficiency Commercial Toilets

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What Is WaterSense?

- WaterSense is a voluntary program launched by EPA in 2006 that provides a simple way to identify water-efficient:
 - Products
 - Homes
 - Programs
 - Practices
- To date, more than 11,000 different models have earned the label
 - Independently certified for water efficiency and performance



What's Special About WaterSense?



- A label with integrity
 - Third-parties *independently* certify that products and homes meet EPA criteria
 - Backed by the credibility of EPA
- Smart use of resources
 - EPA provides national standardization and outreach for water-efficiency
 - Manufacturers and builders absorb product research, testing, and branding costs
 - Licensed certifying bodies certify the products and police the label's use
 - EPA, manufacturers, builders, retailers, and other partners help market/incentivize purchase of labeled products and homes

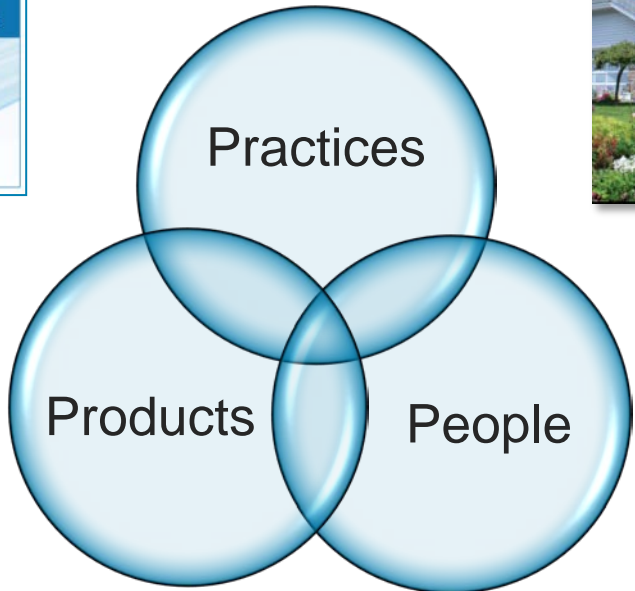
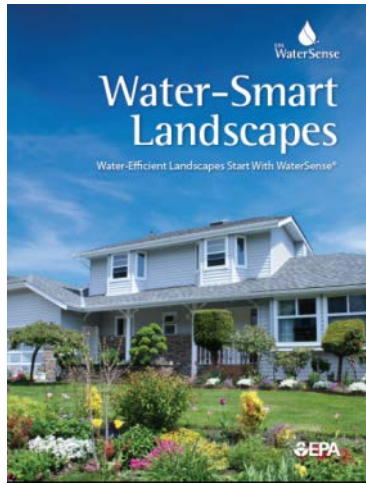
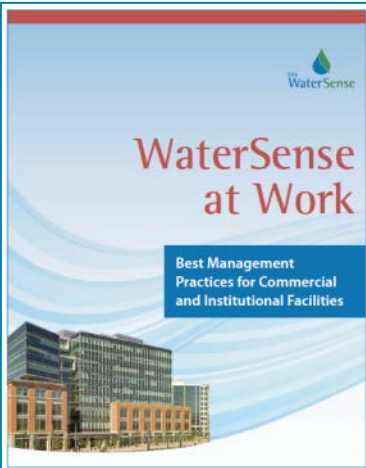
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WaterSense Focus: 3 Ps



Facility level water savings with BMPs for design, O&M, retrofit, and replacement phases



Specific fixtures and technologies save water

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Partners reach users to change behavior

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WaterSense Product Evaluation Factors

WaterSense uses the following factors in determining which products to label

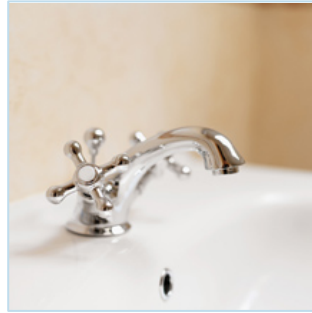
Product must:

- 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

WaterSense Labeled Products



Flushing Urinals



Lavatory Faucets



Irrigation Controllers

More than 11,000 product models have earned the label



Pre-rinse Sprayers



Tank-Type Toilets



Showerheads



New Homes



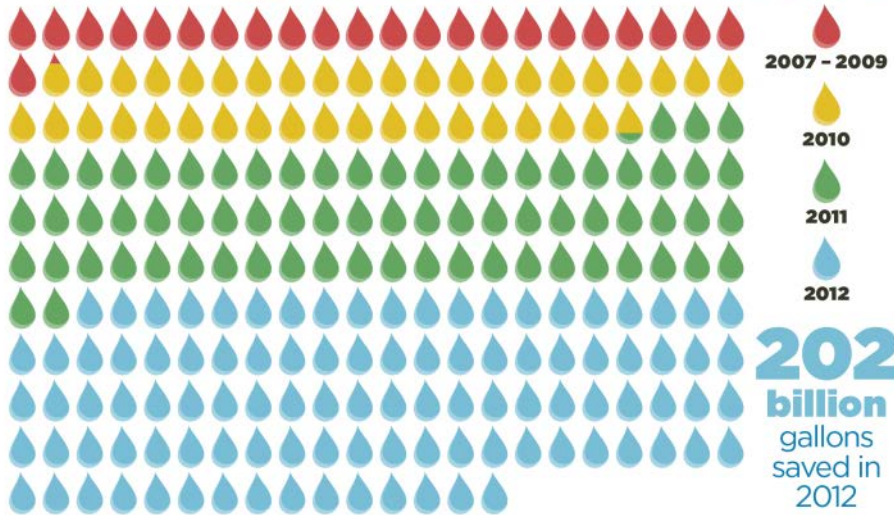
Water factors are also included in many ENERGY STAR® qualified products



Savings Add Up! 2006-2012



487 billion gallons of water saved since 2006!

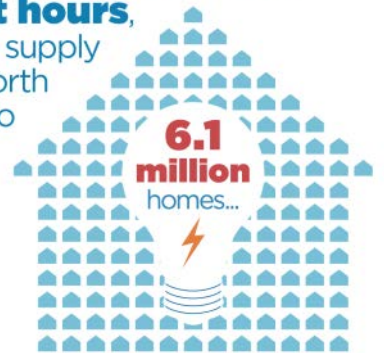


That's enough water to supply all the homes in **Colorado** and **Arizona** for a year!

WaterSense has helped **reduce** the amount of **energy needed** to heat, pump, and treat water by

64.7 billion

kilowatt hours, enough to supply a year's worth of power to more than



...and **saving consumers**

\$8.9 billion in water and energy bills

Schedule for Product Evaluation

	<i>Complete</i>	<i>2013/2014</i>	<i>2015 and Beyond</i>
<i>Irrigation</i>	<i>Weather-based Controllers Professional Certification Programs</i>	<i>Soil Moisture-based controllers</i>	<i>Emission devices (sprinklers)</i>
<i>Residential Products</i>	<i>Tank-Type Toilets Faucets Showerheads</i>	<i>Water Softening Systems</i>	<i>Water Treatment Systems Whole House Humidifiers</i>
<i>Commercial Products</i>	<i>Flushing Urinals Pre-Rinse Sprayers</i>	<i>Flushometer-Valve Toilets</i>	<i>Other Sprayers Kitchen Equipment</i>
<i>Other</i>	<i>Single and multi-family Homes</i>	<i>Additional Professional Certifications</i>	<i>Water Meters</i>



Flushometer-Valve Toilets Background

- There are approximately 26.7 million flushometer-valve toilets installed in the U.S.
- Over 500,000 new models are sold annually for installation in new buildings and for replacement of aging fixture.
- Energy Policy Act (EPAAct) 1992 set the maximum flush volume of 1.6 gpf (6.0 Lpf).
- High-efficiency models flush at 1.28 gpf (4.8 Lpf) or less.
- Nationally, 56 billion gallons of water could be saved annually if all existing flushometer-valve toilets flushing greater than 1.28 gpf were replaced with high-efficiency models.

Flushometer-Valve Toilets Background

- WaterSense released an NOI on August 8, 2013 to solicit feedback from stakeholders
- This presentation will discuss:
 - EPA’s considerations for a draft specification
 - Remaining issues and questions



Potential Specification Scope

- Toilet fixtures which use water from a flushometer valve to flush waste
- Single-flush flushometer valves
- Dual-flush flushometer valves
- Any other flushometer-valve-type technologies that meet the performance requirements
- Only a toilet with both WaterSense labeled counterparts will be considered a WaterSense labeled flushometer-valve toilet



Potential Water Efficiency Criteria

- Average maximum water consumption of single-flush toilets shall not exceed 1.28 gpf (4.8 Lpf).
- WaterSense is considering establishing a maximum flush volume of 1.28 gpf (4.8 Lpf) for dual flush toilets, which would include the full flush.



Potential Performance Requirements

- Toilet fixtures and flushometer valves, including dual-flush toilets, must comply with their applicable ANSI standards.
- At a minimum, toilet fixtures and flushometer valves must meet the waste extraction requirements indicated in these standards.
 - Cased and uncased media are acceptable for testing
 - WaterSense is assessing additional performance testing requirements

Flush Performance Testing Protocol Considerations

- WaterSense received comments on the NOI from large commercial property managers indicating concerns, including:
 - Toilet paper clinging to the bowl at or above the water line
 - Ability to flush additional wastes commonly found in commercial applications that are not covered in the existing standards
- WaterSense is in the process of conducting testing to gauge the existing performance capacity of flushometer-valve toilets.
- A new testing protocol would verify the effectiveness of these toilets in commercial settings, where toilets may undergo more stress.

Purpose of Additional Performance Testing

- Determine what a reasonable duty factor is for flushometer-valve toilets.
 - What types of waste are commonly flushed?
 - Some investigative testing will push the envelope to obtain comparable data needed to determine reasonable duty factor.
- Determine what tests methods and materials are repeatable.
 - Ensure all testing procedures are easy to replicate.
 - Ensure all testing labs would obtain the same results.

Performance Testing with Toilet Seat Covers

- Testing addition of up to two seat covers.
- Preliminary results indicate a successful flush of one seat cover when the majority of it is in contact with the water.
- Two seat covers seem to result in a high chance of failure.
- Test method for how the seat cover is added to the toilet bowl to be determined based on further testing.



Performance Testing with Paper at the Waterline

- Testing toilet paper and Kraft paper wetted and placed at the compass points of the toilet fixture.
- Paper wads placed at the waterline, immediately above the waterline, and approximately 1 cm above the waterline.
- Preliminary results indicate some fixtures are far better at removing media placed above the waterline.
- Similar results with both toilet paper and Kraft paper.





Next Steps for Developing a Performance Testing Protocol

- Test additional fixture and flushometer-valve models from various manufacturers.
- Mix and match different flushometer valves and toilet fixtures to evaluate changes in performance.
- Refine protocol for flushing a seat cover(s).
- Refine protocol for adhering toilet paper or Kraft paper to toilet fixture water line.
- Final performance testing protocol must be:
 - Effective
 - Realistic
 - Repeatable

Other Potential Flushometer Valve Performance Criteria

- The flushometer-valve must have a primary actuator that has a non-hold-open design.
- The flushometer valve must not contain a flush volume adjustment that would allow the flush volume to vary more than $\pm 10\%$ from the rated flush volume.
- Considering requirements to ensure that flushometer valves are not intentionally designed to accept replaceable or maintainable parts that cause them to exceed their rated flush volume.

Counterpart Testing

- Flushometer valves will be tested in accordance with the tri-harmonized ASSE #1037 standard.
 - Requires flushometer valves to be tested with representative toilet fixtures from 3 different manufacturers.
- For toilet fixtures, WaterSense will similarly require them to be tested with representative flushometer valves from 3 different flushometer valve manufacturers.



Potential Marking Requirements

- Toilet fixtures intended for use with flushometer valves of varying consumption levels shall be marked with:
 - a dual consumption marking (e.g., 1.28 gpf & 1.6 gpf)
 - a consumption range (e.g., 1.28 – 1.6 gpf)
 - NOT the words “or less” (e.g. NOT 1.6 gpf or less)
- Flushometer valves must be marked in accordance with requirements in the soon to be tri-harmonized ASSE #1037.
 - Includes marking the rated flush volume on the body of the flushometer valve.



Next Steps and Schedule

- Specification development will begin following completion of performance testing analysis and testing protocol development.
- Tentatively, a draft specification will be released this Summer.
- Comments on the draft specification will be accepted for 30-60 days after its release.
- Anticipate releasing the final specification later this year.



Questions?



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