



Every drop counts.

GovEnergy Workshop and Exposition  
The WaterSense Program  
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# Presentation Outline

- Overview of WaterSense<sup>SM</sup>
- Advances in Water Efficiency
- WaterSense and Executive Order 13423



# WaterSense Overview Vision & Mission

## *Vision*

Create an ethic of water efficiency.

## *Mission*

To promote the value of water and help Americans make smart decisions regarding water use and water-using products.

Transform the marketplace by encouraging consumers and organizations to purchase water-efficient products and services.



# WaterSense Overview Philosophy

- Products labeled through WaterSense will:
  - Be backed by the credibility of the U.S. EPA
  - Be promoted through partnerships with utilities, manufacturers and retailers
- To be considered for the label, a product area must be able to:
  - Realize water savings on national level
  - Perform as well or better than their less efficient counterparts
  - Be about 20% more efficient than conventional counterparts
  - Achieve water efficiency through several technology options
  - Be effectively differentiated by the WaterSense label
  - Be independently certified by a third party to confirm that the product meets EPA criteria for efficiency and performance
  - Provide measurable results

## Key Documentation

Product Research Report

Presentation of Key Issues and Initial Positions/Options

- Cover Letter
- Draft Specification
- Supporting Statement Documenting Rationale Behind Draft Specification

- Comment Summary Document
- Timeline for Final Specification Development

Rollout Materials  
(See detailed list in Specification Development Approach)

## WaterSense Actions

Conduct Technical and Market Research

Finalize Research Report *180 days*

Issue Notice of Intent

Finalize Draft Spec *Variable*

Issue Draft Specification and Open Comment Period

Collect Comments *30 days*

Hold Public Meeting

Collect Comments *30 days*

Close Public Comment Period

Review Comments and Make Revisions *Variable*

Issue Final Specification

## Interested Party Actions

Receive Notice of Intent and Provide Information on Key Issues

Receive Spec Packet and Provide Written Comments

Provide Feedback

Have Products Certified and Promote WaterSense Products



# Product Certification Process

Products must be certified by a licensed, independent third-party product certification body

- Test product conformance to WaterSense specification
- Assess manufacturers quality management system
- Authorize manufacturers to use the WaterSense label
- Conduct periodic surveillance (i.e., audit factories, retest products, police the use of the label)



# Confidence in WaterSense Labeled Products

## High Efficiency Toilet (HET) Case Study

### Conventional Toilets

- Maximum Water Use
  - 1.6 gallons per flush
- Performance Requirements
  - Must meet ASME A112.19.2 flushing requirements

### WaterSense Labeled HETs

- Maximum Water Use
  - 1.28 gallons per flush
- Performance Requirements
  - Must meet ASME A112.19.2 flushing requirements
  - Must successfully remove at least 350 grams of waste



# WaterSense Product Label



Certified by  
ABC Laboratories, Inc.

Indicates that labeled products meet EPA criteria for efficiency and performance



# Advances in Water Efficiency

- Energy Policy Act (EPAct) of 1992 set water efficiency standards for
  - Water Closets (toilets)
  - Urinals
  - Faucets
  - Showerheads
- Other water-using equipment were not addressed
  - Landscape irrigation equipment (e.g., weather based controllers, soil moisture sensors, drip irrigation)
  - Medical equipment (e.g. steam sterilizers)

# Advances in Water Efficiency: Toilets

Type	Application	Traditional Water Use	Existing Standard	High-Efficiency
Gravity Flush Tank	Residential housing	Pre1980: 5 gal/flush  1980-94: 3.5 gal/flush	1.6 gal/flush	1.28 gal/flush with at least 350 gram waste removal. <b>Look for WaterSense label</b>
Pressure Assist Tank	Residential housing, Commercial facilities and barracks	Pre1980: 5 gal/flush  1980-94: 3.5 gal/flush	1.6 gal/flush	1.28 gal/flush with at least 350 gram waste removal. <b>Look for WaterSense label</b>
Flush Valve	Commercial facilities and barracks	Pre1980: 5 gal/flush  1980-94: 3.5 gal/flush	1.6 gal/flush	1.28 gal/flush (Currently under review by WaterSense)



# Advances in Water Efficiency: Toilets

- Initial EPAAct 1992 compliant toilets
  - Poor flushing performance and in some cases little to no water savings (double flushing)
- Industry advancements in water efficiency and performance – post 1992 EPAAct
  - Steeper more hydrodynamic bowl shapes
  - Smaller tanks with more hydraulic head and associated pressure to assist gravity flushing
  - Larger flush valve openings - over 3 inches compared to less than 2 inches on older models
  - Dual flush technology
- WaterSense – 2007
  - Developed specification for high-efficiency tank-type toilets (HETs)
  - Water efficiency - 1.28 gpf or less
  - Performance – 350 grams of solid waste removal
  - 35 tank-type toilet models have been certified and labeled
  - Technical and market research underway for high-efficiency flushometer valve toilets (for commercial applications)

# Advances in Water Efficiency: Urinals

Type	Application	Traditional Water Use	Existing Standard	High-Efficiency
Standard Flush	Commercial facilities and barracks	1.5 – 3 gal/flush	1.0 gal/flush	0.5 gal/flush (Currently under review by WaterSense)
No water	Commercial facilities; remote application with limited water and high use	1.5 – 3 gal/flush	1.0 gal/flush	0.0 gal/flush (Currently under review by WaterSense)



# Advances in Water Efficiency: Urinals

- Industry advancements in water efficiency and performance – post 1992 EPA Act
  - High-efficiency urinals (HEU) that flush with 0.5 gallons or less
    - Steeper more hydrodynamic urinal shapes and trapways
    - Valves with internal pressure compensating flow regulators
  - Non-water urinals
    - Eliminate flush valve
    - Waste controlled through liquid or chemical seal cartridges or traps
    - Considerations: sanitation, odor, maintenance, user acceptability
  - Product research underway for urinals that flush with
    - One-quart, one-liter, and one-pint
- WaterSense – 2007
  - Conducting technical and market research on HEUs and non-water urinals

# Advances in Water Efficiency: Faucets

Type	Application	Traditional Water Use	Existing Standard	High-Efficiency
Lavatory: Private Use	Residential housing, including hotel guest rooms and hospital rooms	3 gpm	2.2 gpm at 60 psi	1.5 gpm at 60 psi – <b>Look for WaterSense label</b>
Lavatory: Public Use	Facilities that are not intended for private use (e.g., office buildings, food service facilities).	3 gpm	2.2 gpm at 60 psi	0.5 gpm at 60 psi per ASME A112.18.1
Lavatory: Metering	High use applications		0.25 gallons per cycle	
Kitchen and other applications	Kitchens, pantries, food service facilities, other non-lavatory applications	3-5 gpm	2.2 gpm	none



# Advances in Water Efficiency: Faucets

- Industry advancements in water efficiency and performance – post 1992 EPA Act
  - Regulate flow through the use of flow restrictors or flow regulators (e.g., aerators and laminar control devices)
    - Narrowing orifice does not always provide adequate flow
  - Designed products to provide pressure compensation
- WaterSense – 2007
  - Developed specification for high-efficiency lavatory faucets
  - Water efficiency – maximum 1.5 gpm @ 60 psi
  - Performance – minimum 0.8 gpm @ 20 psi
  - Anticipate publishing final specification in October 2007



# Advances in Water Efficiency: Showerheads

Type	Application	Traditional Water Use	Existing Standard	High-Efficiency
Wall mount, Handheld	Barracks, offices	3.5-5 gpm	2.5gpm at 80 psi	< 2.0 gpm at 80 psi. WaterSense specification under development



# Advances in Water Efficiency: Showerheads

- Industry advancements in water efficiency and performance – post 1992 EPA Act
  - Regulate flow through reducing orifice size, narrowing discharge pattern, mixing air in shower stream
  - Design products to provide pressure compensation
  - Multiple spray modes or spray patterns provided through sliding tapered plugs
  - Vary spray distribution and velocity through air induction or booster valves (vacuum restriction)
- WaterSense – 2007
  - Collaborating with the American Society of Mechanical Engineers (ASME), and California Energy Commission to develop a water efficiency and performance specification



# Advances in Water Efficiency: Landscape Irrigation

- Traditional Technologies
  - Clock timers
    - Applies water to landscape based on predetermined schedule
  - Spray head irrigation
- Emerging Technologies
  - Weather-based controllers
    - Irrigation schedule adjusted based on real-time weather data
    - Signal from off-site weather station or data from on-site sensors
  - Rain Sensors and Soil Moisture Sensors
    - Adjusts irrigation schedule based on site-specific conditions
    - Recent advances have made sensors more accurate and reliable
  - Microirrigation
    - Emitters designed to apply water directly to root zone at slow rate
    - Eliminates losses through evaporation, over spraying, and runoff
- WaterSense – 2007
  - Issued a notification of intent to develop a specification for irrigation control technology
  - Conducting technical and market research on rain and soil moisture sensors and microirrigation



# Advances in Water Efficiency: Landscape Irrigation

- Irrigation Association (IA) established certification programs for Irrigation Professionals practicing water efficiency – 1981
  - Certified Irrigation Designer
  - Certified Irrigation Contractor
  - Certified Golf Irrigation Auditor
  - Certified Landscape Irrigation Auditor
- WaterSense – 2006
  - Labeled IA's certification programs
  - 244 WaterSense Certified Irrigation Professionals



# Advances in Water Efficiency: Steam Sterilizers

## ■ Traditional Technologies

- Tempering water mixed with steam condensate to reduce condensate temperature in drain
- Tempering water discharged continuously while sterilizer is “on” or in “standby” mode
- Sterilizer chamber evacuated by vacuum
  - Vacuum generated by water flow through an ejector

## ■ Emerging Technologies

- Tempering water activated by temperature control switch
  - Only activated for a few seconds when condensate is being discharged
  - Reduces tempering water demand by 90% or more
- Vacuum generated by electric pump rather than water ejector or by internally capturing and reusing ejector water

## ■ WaterSense – 2007

- Conducting technical and market research

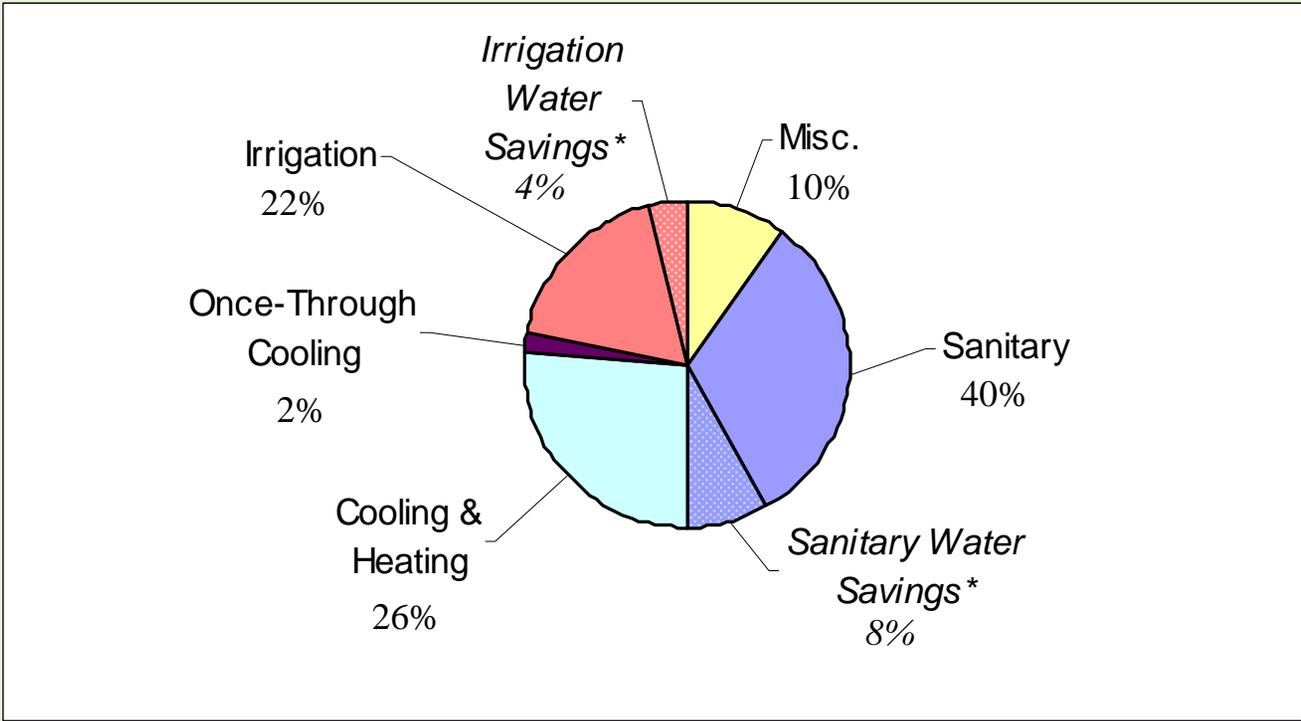


# WaterSense and Executive Order 13423

- **Goals under EO 13423**
  - Water use intensity reduction
    - FY 2007 baseline
    - 2% annually; 16% by October 1, 2015
  - Purchasing
    - Purchase WaterSense labeled products
    - Use WaterSense professionals
- **WaterSense will evaluate labeling water-efficient products in many categories of interest**
  - Sanitary fixtures (toilets, urinals, showerheads, lavatory sink faucets)
  - Commercial equipment (e.g., steam sterilizers)
  - Irrigation equipment (e.g., controllers, sensors)
- **In general, WaterSense labeled products will generate 20% water savings, or better**

# WaterSense and Executive Order 13423

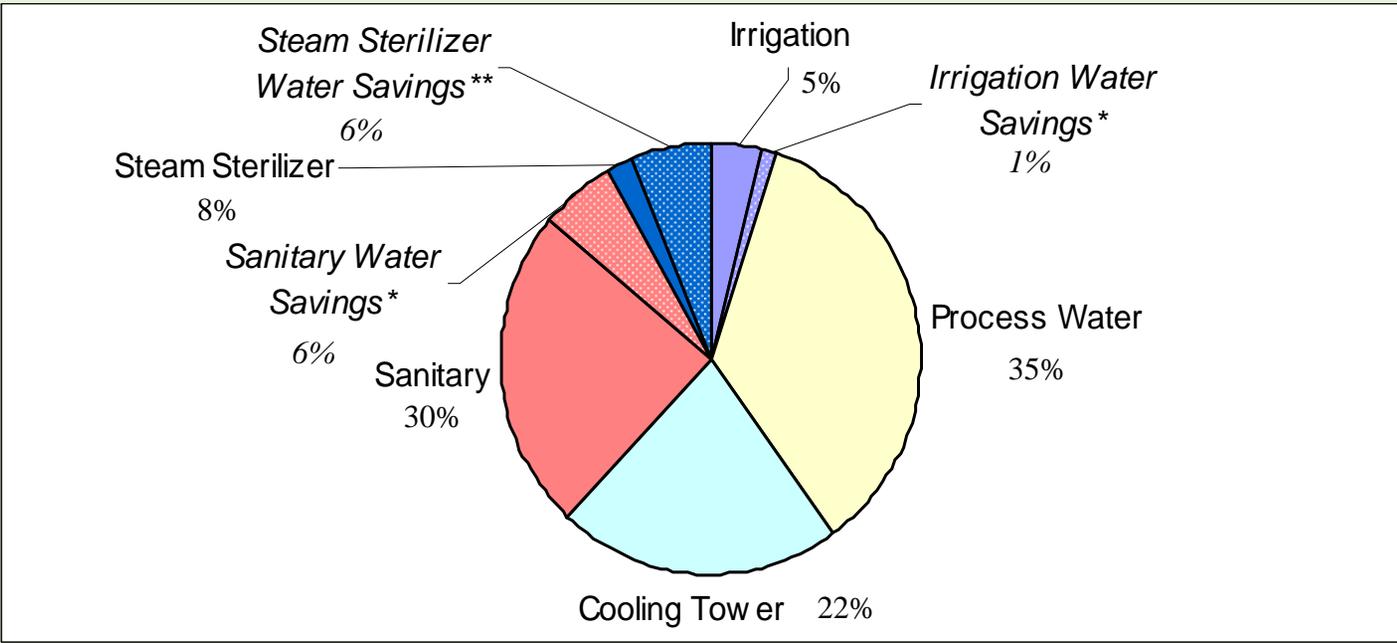
## Typical Office Building Potential WaterSense Savings



\*Hypothetical savings based on a 20% reduction

# WaterSense and Executive Order 13423

## Multi-Building Research Campus – Northwest US Potential WaterSense Savings



\*Hypothetical savings based on a 20% reduction

\*\*Hypothetical savings based on a 75% reduction



## More Information



Web site: [www.epa.gov/watersense](http://www.epa.gov/watersense)

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