



WaterSense® Public Meeting

Draft Version 2.0 of the WaterSense Specification for Tank-Type Toilets

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Housekeeping

- All attendees are muted to minimize background noise.
- Please type questions into the Zoom Q&A. We will have a dedicated time for Q&A at the end of each section and at the end of the presentation as time allows.
- These PowerPoint slides, a meeting summary, and a recording will be posted on the public website.
- Submit written comments to: watersense-products@erg.com
- This meeting is meant to be an open discussion.
- All questions, comments, and concerns are welcome!

Meeting Purpose

At this meeting, we will:

- Explain WaterSense's specification revision process
- Summarize EPA's draft revisions to the specification for tank-type toilets
- Summarize the potential impact the revised specification will have on currently labeled toilets
- Answer questions about the draft specification so that interested parties can provide more precise comments

Generally, we do not:

- Provide resolution to comments or concerns
- Finalize specifics of the revised specification
- Provide a guaranteed timeline for the revision completion

Agenda

- Brief Introduction to WaterSense
- Tank-Type Toilet Specification Background
- Draft Version 2.0 of the Specification for Tank-Type Toilets
 - Scope and Objective
 - General Requirements
 - Water Efficiency Criteria
 - Flush Performance Criteria
 - Product Marking and Documentation
 - Appendix A: Informative Annex for WaterSense Labeling
 - Appendix B: Transition Period
- Next Steps
- Questions and Discussion



Part 1

Introduction to WaterSense



The WaterSense Vision

- WaterSense offers people a simple way to use less water
- Our vision is that all Americans will understand the importance of water efficiency and take actions to reduce their water use—in their homes, outdoors, and at work

How will we achieve it?

- By transforming the marketplace for products and services that use water
- By promoting a nationwide ethic of water efficiency to conserve water resources for future generations and reduce water infrastructure costs

WaterSense Can Help

WaterSense is a voluntary partnership program launched by EPA in 2006 that provides a simple way to identify water-efficient:

- Products
- Programs
- Practices
- Homes



Products are independently certified for water efficiency **and** performance



WaterSense Labeled Products



Lavatory Faucets

Labeled since 2007
20,500 labeled models



Tank-Type Toilets

Labeled since 2007
5,200 labeled models



Flushing Urinals

Labeled since 2009
800 labeled models



Flushometer-Valve Toilets

Labeled since 2015
1,600 labeled models



Showerheads

Labeled since 2010
14,400 labeled models



Weather-Based Irrigation Controllers

Labeled since 2011
980 labeled models



Soil Moisture-Based Irrigation Controllers

Labeled since 2021
4 labeled models

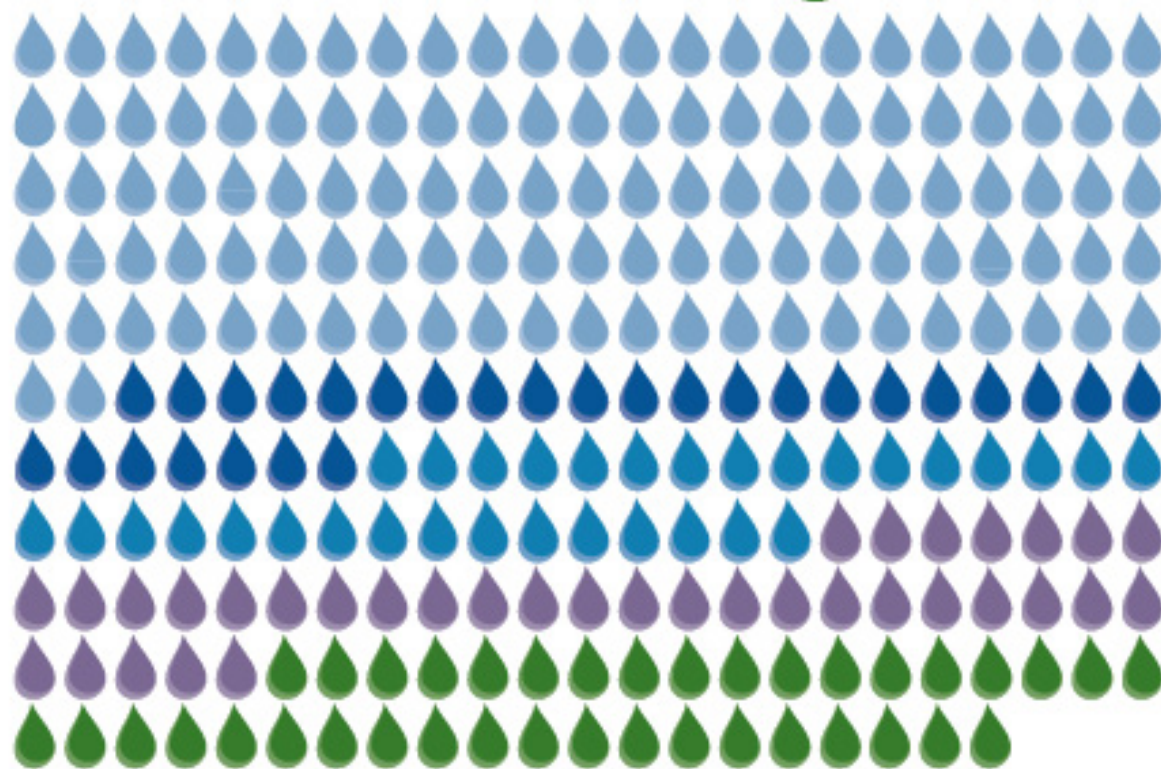


Spray Sprinkler Bodies

Labeled since 2017
620 labeled models

Accomplishments

7.5 trillion gallons of water



That's the water used in **9.5 months**
by all U.S. households!

1.1
trillion
gallons
saved in
2022

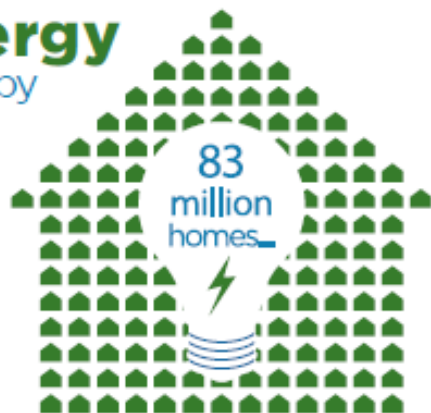
Accomplishments

WaterSense

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

880 billion

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



...eliminating

**337 million
metric tons**

of greenhouse gas
emissions...



...the equivalent of planting

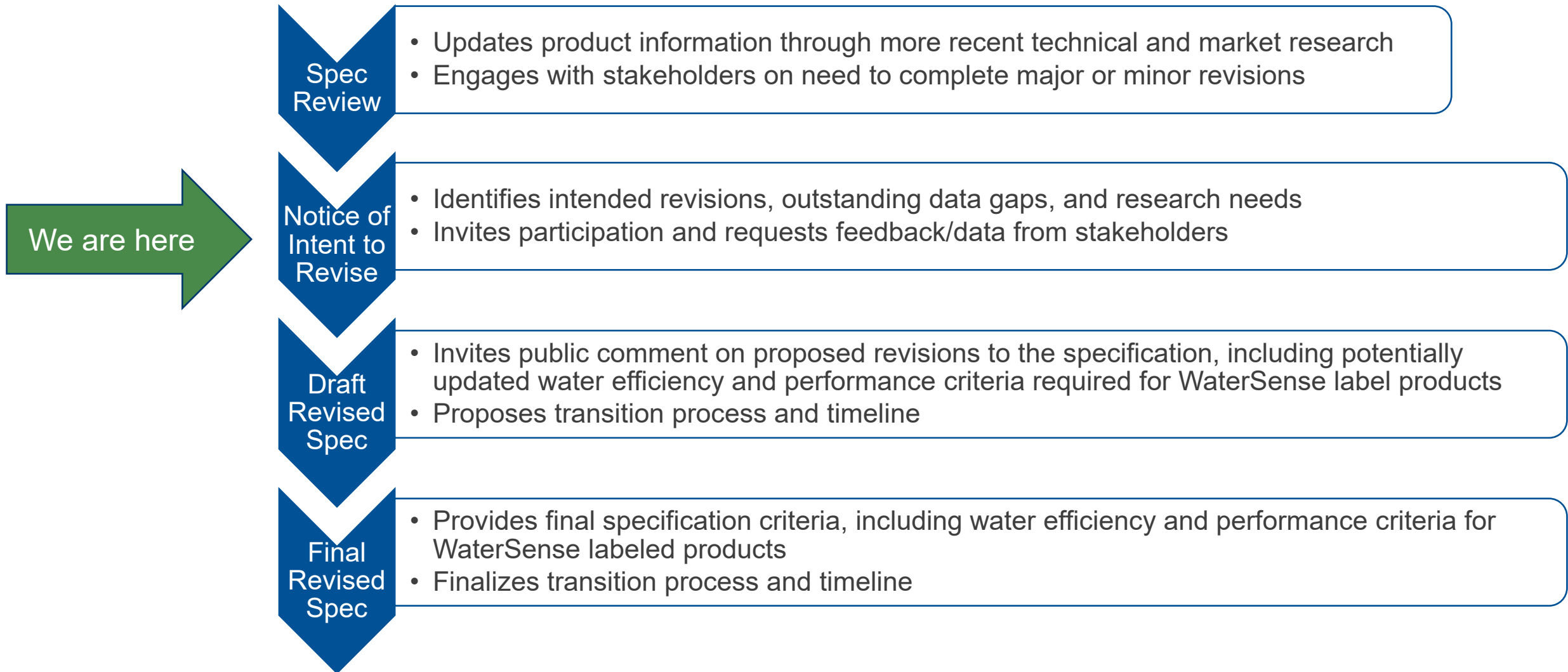
5.6 billion trees...



...and saving consumers

\$171 billion
in **water** and
energy bills

Specification Revision Process



Part 2

Tank-Type Toilets Background

Specification Background

WaterSense Specification for Tank-Type Toilets

- Released January 24, 2007
- Last revised June 2, 2014 (Version 1.2)
- Includes water efficiency, performance, and marking criteria for tank-type toilets to earn the WaterSense label
- Specification is largely harmonized with high-efficiency requirements for tank-type toilets in ASME A112.19.2/CSA B45.1
- Currently, ~150 different brands/manufacturers offer more than 5,200 models of labeled toilets



Notice of Intent

WaterSense Notice of Intent (NOI) to Revise the Specification for Tank-Type Toilets

- Released June 2023
- Suggested that the primary intent of the revision was to reevaluate effective flush volume requirement of dual-flush tank-type toilets
- Requested comments on other potential revisions to the scope, water efficiency criteria, and performance criteria
- EPA considered feedback from stakeholders on NOI
- EPA has decided to move forward with specification revision



Part 3

Draft Version 2.0 of WaterSense Specification for Tank-Type Toilets

Scope

Current Specification Scope

- Single-flush and dual-flush tank-type toilets
 - Gravity
 - Flushometer tank (pressure-assist)
 - Electrohydraulic toilets
 - Any other tank-type technologies that meet these performance specifications
- Tanks and bowls are not independently eligible



Scope

Revisions to the Specification Scope

- Explicit inclusion of combination in-wall toilet carrier systems and wall hung bowls
- Minor editorial changes to list of toilet types to increase readability
- Incorporation of clarification TT-0507-1
 - Prohibits toilet tanks with adjustable water use settings from earning the WaterSense label

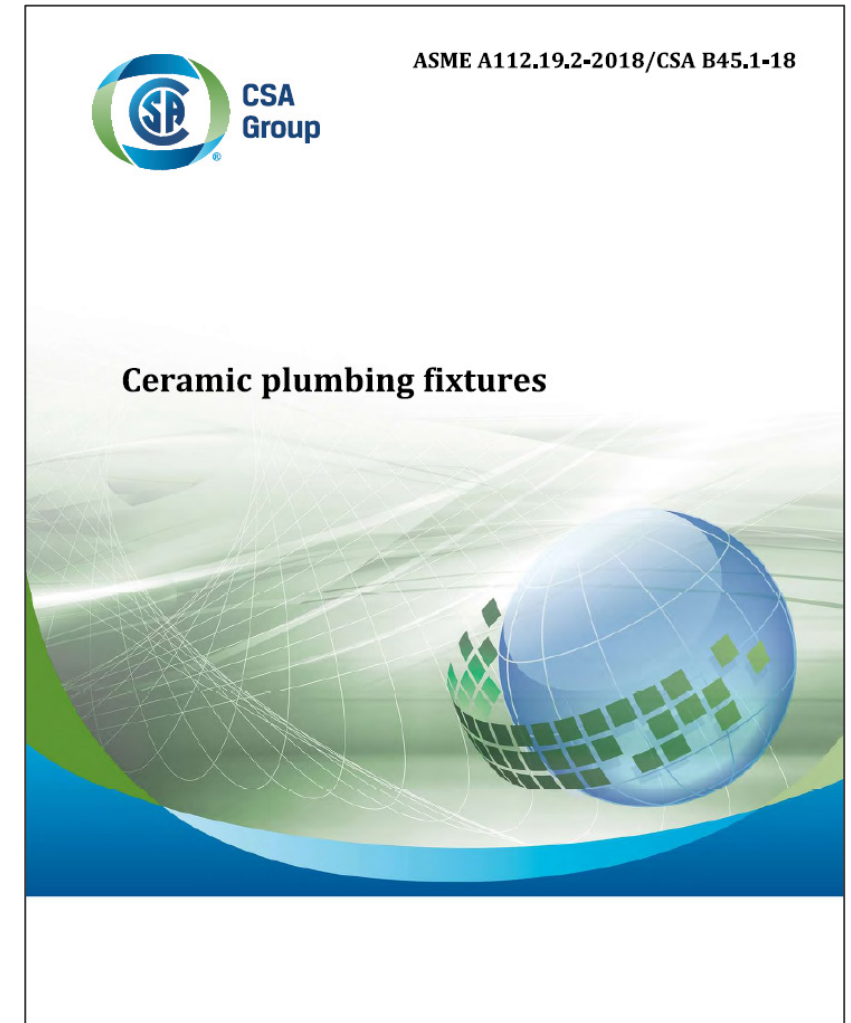


EPA is not changing the scope; rather, EPA is ensuring the specification clearly conveys the scope and includes relevant clarifications.

General Requirements

Current Specification Requirements

- Toilets are required to conform to requirements in the ASME A112.19.2/CSA B45.1 *Ceramic Plumbing Fixtures*
- Dual-flush toilets are required to conform to requirements in the ASME A112.19.14 *Six-Liter Water Closets Equipped with a Dual Flushing Device*



General Requirements

Revisions to the General Requirements

- EPA is removing the reference to ASME A112.19.14
- ASME A112.19.2/CSA B45.1
 - Already explicitly references applicable requirements from ASME A112.19.14
 - Intends to incorporate applicable requirements from ASME A112.19.14 during 2024 publication
- Consistent with *WaterSense Specification for Flushometer-Valve Water Closets*

EPA is not changing the effective requirements but rather consolidating references to applicable standards.

Water Efficiency Criteria

Current Specification Requirements

- Single-flush toilets: Flush volume shall not exceed 1.28 gallons (4.8 liters).
- Dual-flush toilets: Effective flush volume shall not exceed 1.28 gallons (4.8 liters).
 - Effective flush volume is the average flush volume of two reduced flushes and one full flush (2:1 ratio).
- Flush volumes shall be tested in accordance with ASME A112.19.2/CSA B45.1 and ASME A112.19.14.
- Samples with an average flush volume in excess of 0.1 gallons greater than their rated flush volume are deemed to fail.
- Samples with average flush volumes less than or equal to 0.1 gallon can be adjusted to their rated flush volume.

Water Efficiency Criteria

Background

- Dual-flush toilets are designed with two flushing modes that vary by make and model:
 - Reduced-flush volume can range from 0.5 to 1.1 gpf
 - Full-flush volume can have a maximum of 1.6 gpf, consistent with federal maximum
- During specification review, some comments expressed concerns about dual-flush toilets
 - Anticipated savings may not be achieved based on user behavior



Water Efficiency Criteria

Revisions to Specification Requirements

- EPA is eliminating the effective flush volume calculation for dual-flush toilets
- EPA is instead establishing a singular maximum flush volume requirement of 1.28 gpf for both single-flush toilets and the full-flush mode of dual-flush toilets
- Criteria regarding flush volume testing and rated flush volume accuracy remain unchanged

EPA's revision to the water efficiency criteria will affect the certification status of dual-flush toilets with a full-flush volume greater than 1.28 gpf.

Questions and Discussion



Flush Performance Criteria

Current Flush Performance Criteria

- Toilet model performance is identified as either a “pass” or “fail” depending upon whether it can successfully and completely clear all test media from the fixture in a single flush in at least four of five attempts.
- Flush performance testing shall be conducted in accordance with the waste extraction test protocol provided in ASME A112.19.2/CSA B45.1.



EPA is not revising the flush performance criteria of the specification.

Marking and Product Documentation

Current Specification Requirements

- Toilet fixtures shall be marked in accordance with requirements in ASME A112.19.2/CSA B45.1 with the exception identified in the following statement:
 - Toilet bowls intended to be used with tanks of varying consumption levels (e.g., 1.6 and 1.28 gpf) can be marked with a dual consumption marking or a consumption range, as indicated in ASME A112.19.2/CSA B45.1; *however, toilet bowls shall not be marked with the words “or less” to indicate compatibility with tanks of varying consumption levels.*

Marking and Product Documentation

Revisions to Specification Requirements

- EPA is removing language pertaining to “or less” from its specification. This is no longer permitted in ASME A112.19.2/CSA B45.1.
- EPA is incorporating 3 clarifications into this section
 - *TT-0410-2: Tank and Bowls Manufactured and Sold by Different Companies*
 - *TT-0617-1: Marking and Labeling Requirements for Tank-Type Toilets With Components Made by Different Manufacturers*
 - *TT-0617-2: Bowl Packaging Requirements for Tank-Type Toilets Made by Different Manufacturers*

EPA is not changing the effective marking and product documentation requirements. EPA is removing redundancy and incorporating clarifications that regard marking and product documentation that have taken effect since the original publication of the specification.

Appendix A: Informative Annex for WaterSense Labeling

Revisions to Appendix A

- Renamed from “Appendix A: Requirements for WaterSense Labeling”
- Incorporation of clarification *TT-0410-2: Tank and Bowls Manufactured and Sold by Different Companies* into Section 2.0: Conformity Assessment
- Deletion of Section 3.0: Clarifications
 - Previously-included clarifications incorporated throughout body of specification instead
- Addition of Section 3.0: WaterSense Label Use
 - Clarifies marking guidelines for product packaging and online and printed specification sheets

Summary of Revisions

Section	Revision?	Summary
Scope	Minor	Clearly state scope, incorporate clarification
General Requirements	Minor	Consolidate references to standards
Water Efficiency Criteria	Major	Eliminate effective flush volume calculation, establish singular maximum flush volume requirement
Flush Performance Criteria	None	No revisions
Marking and Product Documentation	Minor	Remove redundancy, incorporate clarifications
Appendix A	Minor	Redistribute clarifications, add section on WaterSense Label Use
Appendix B	New	New section on transition timeline

Questions and Discussion



Appendix B: Transition Period

- The discussed revisions to the water efficiency criteria will impact the certification status of dual-flush toilets with a full-flush volume over 1.28 gpf
 - **Recertification or decertification required**
- The revisions will not impact single-flush toilets or dual-flush toilets with a full-flush volume less than or equal to 1.28 gpf
 - Retesting and recertification not required
- Revisions will not impact current licensing status of certifying bodies
 - Edits to licensing agreements or licensing agreement amendments currently in effect not required

Appendix B: Transition Period

- Impact of Intended Revision on Labeled Models

(Full) Flush Volume	≤1.6 gpf and >1.3 gpf	≤1.3 gpf and >1.1 gpf	≤1.1 gpf	Total
Dual-Flush Models	1,487	405	91	1,983
Single-Flush Models	-	2,804	495	3,299
Total Labeled Models	1,487	3,209	586	5,282
Percentage of Dual-Flush Models	75.0%	20.4%	4.6%	
Percentage of Total	28.1%	60.8%	11.1%	

Approximately 75 percent of currently labeled dual-flush models would no longer be eligible

Appendix B: Transition Period

Date	Estimated Timeline	Activities
Publication date	Summer 2024	<ul style="list-style-type: none"> EPA publishes final <i>WaterSense Specification for Tank-Type Toilets</i>, Version 2.0. Manufacturers, at their discretion, can begin to remove ineligible models from product certification listings.
Effective date	Publication date + six months	<ul style="list-style-type: none"> <i>WaterSense Specification for Tank-Type Toilets</i>, Version 2.0 takes effect. Dual-flush models that are unable to meet the specification criteria can no longer bear the WaterSense label. EPA designates all dual-flush models no longer meeting specification criteria as “discontinued.”
Certifying body transition period	Effective date + 60 days	<ul style="list-style-type: none"> Licensed certifying bodies are required to update certification listings and submit Version 4.0 of the PNT with up-to-date product listings.

Appendix B: Transition Period

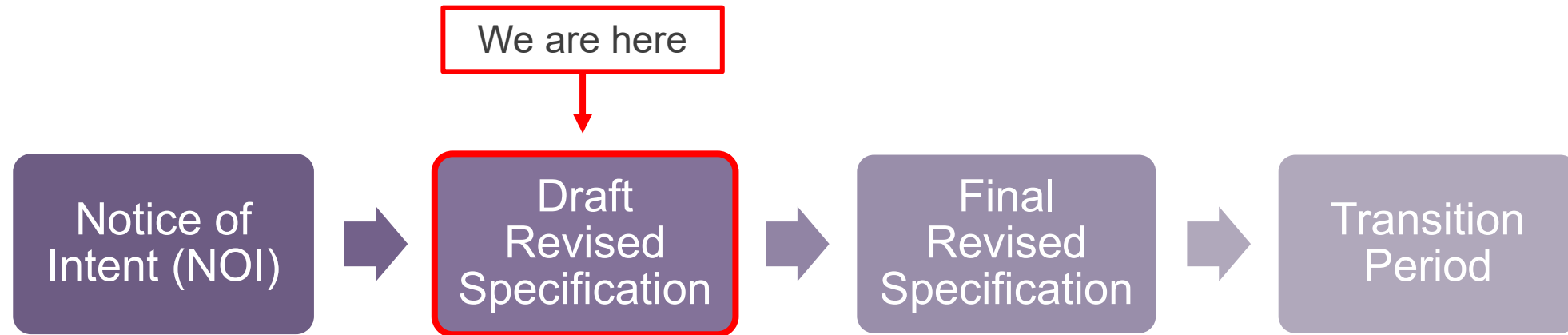
Date	Estimated Timeline	Activities
Grace period	Effective date until the discontinue date	<ul style="list-style-type: none"> EPA pauses brand monitoring activities related to dual-flush toilets to offer manufacturers and private labelers the opportunity to update materials associated with previously labeled models. Manufacturers and private labelers work on updates to online and newly printed materials associated with previously labeled models to remove the WaterSense label and any language associated with WaterSense labeling.
Discontinue date	Effective date + six months	<ul style="list-style-type: none"> All dual-flush models no longer meeting specification criteria that were designated as “discontinued” are removed from the WaterSense Product Search Tool.
Ongoing	Following discontinue date	<ul style="list-style-type: none"> EPA reimplements brand monitoring activities related to dual-flush toilets and works with manufacturers, private labelers, and licensed certifying bodies, as applicable, to resolve any identified brand monitoring issues.

Future Research

- *America's Water Infrastructure Act of 2018*
 - Limits the allowed frequency of revisions of specification performance criteria to no more than once every six years after a major revision
- Broad desire among program partners to lower maximum flush volume requirement below 1.28 gpf
- Intent to coordinate with program partners to facilitate research that investigates how lowering the maximum flush volume requirement may impact:
 - User satisfaction
 - Drainline transport
 - Wastewater treatment system performance
 - Public health

Next Steps and Timeline

Specification Revision Process:



- Draft Version 2.0 of the *WaterSense Specification of Tank-Type Toilets* can be reviewed at www.epa.gov/watersense/residential-toilets
- Submit written comments or additional information and data to watersense-products@erg.com
- Comment Deadline: **February 23, 2024**
- EPA is targeting publishing the final revised specification by Summer 2024

Contact Us



General E-mail: watersense@epa.gov

Comment Submission E-mail: watersense-products@erg.com

Website: www.epa.gov/watersense

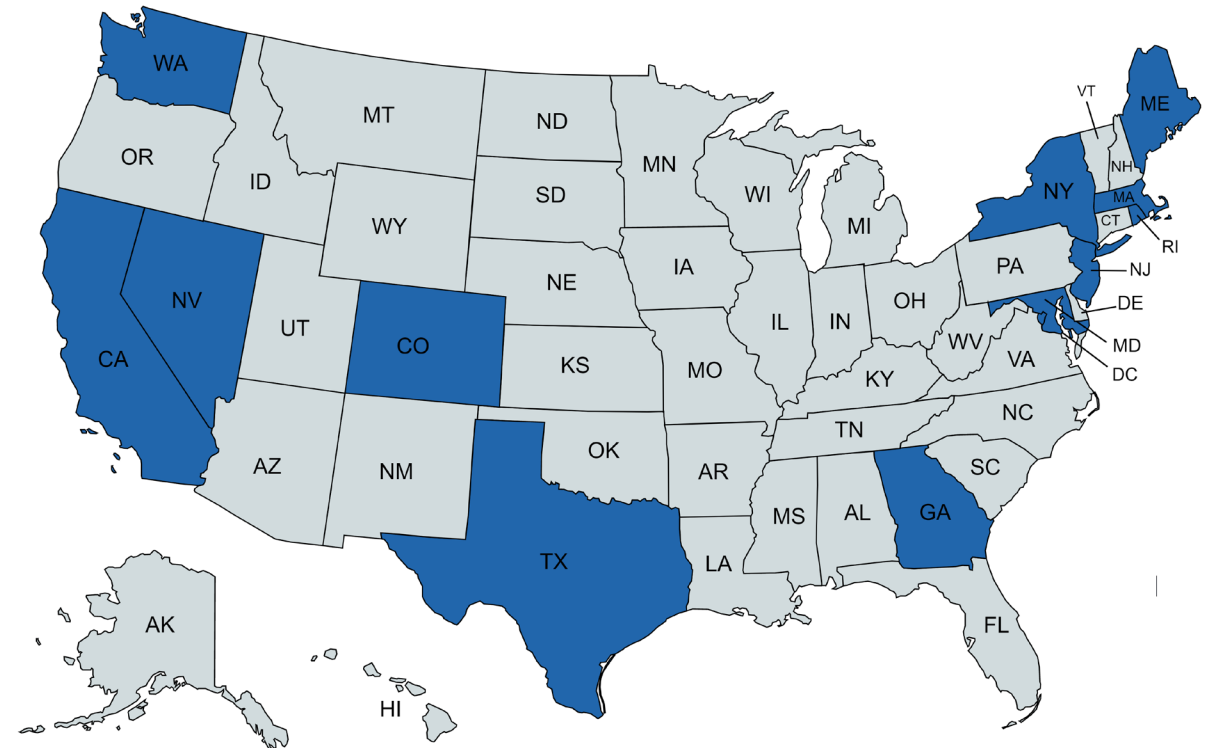
Helpline: (866) WTR-SENS (987-7367)

Supplementary Slides Related to Modified Efficiency Criteria

State Specific Adoption

At least 12 states and multiple municipalities have adopted toilet efficiency standards that require products to use no more than 1.28 gpf, consistent with the WaterSense specification.

- California
- Colorado
- Georgia
- Maine
- Maryland
- Massachusetts
- Nevada
- New Jersey
- New York
- Rhode Island
- Texas
- Washington
- Washington, DC



Other Standards that Reference WaterSense

- LEED
- International Green Construction Code (IgCC)
- ASHRAE 189.1 *Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings*
- IAPMO's Water Efficiency and Sanitation Standard (WE●Stand)
- Green Globes



Dual-Flush Studies

Report	Authors	Reduced : Full Ratio
Seattle Home Water Conservation Study (2000)	Peter Mayer et al. (Aquacraft, Inc.)	0.77:1
Canada Mortgage and Housing Corporation Dual-Flush Toilet Project (2002)	Veritec Consulting	1.6:1 (single-family) 1.1:1 (office male) 2.7:1 (office female) 1.7:1 (office overall) 1.3:1 (coffee shop)
Residential Ultra-Low-Flush Toilet Replacement Program (2003)	Paula Mohadjer, Jordan Valley Water Conservation District	1.48:1
Resident Indoor Water Conservation Study: Evaluation of High Efficiency Indoor Plumbing Fixture Retrofits in Single-Family Homes in the East Bay Municipal Utility District Service Area (2003)	Peter Mayer et al. (Aquacraft, Inc.)	0.48:1
Yarra Valley Water Residential End Use Measurement Study (2004)	Peter Roberts (Yarra Valley Water)	0.75:1
South East Queensland Residential End Use Study: Final Report (2011)	Cara Beal and Rodney A. Stewart (Urban Water Security Research Alliance)	1.16:1 (Gold Coast) 1.16:1 (Brisbane) 1.72:1 (Ipswich) 1.37:1 (Sunshine Coast)
Melbourne Residential Water Use Studies (2013)	Kein Gan and Michael Redhead	1.50:1 (Summer) 1.08:1 (Winter)

User Confusion

- **Thames Water:** 75 percent of users identified the incorrect flush mode
- **SES Water:** 28 percent of customers said they knew which button on their own toilet produced a reduced flush.
- **Water Regulations Approval Scheme (WRAS):**
 - Zero out of 18 dual-flush button designs tested achieved 100 percent recognition
 - The most recognized dual-flush button designs only achieved 92 percent recognition
 - One dual-flush button design only had 19.5 percent recognition



Changing Requirements

- **ASHRAE 189.1 and IgCC:** Sets a max flush volume of 1.28 gpf for the full flush of both tank-type and flushometer-valve dual-flush toilets.
- **MaP PREMIUM:** Sets a 1:1 ratio for the effective flush calculation and requires the volume of the full-flush mode to be 1.28 gpf or less.
- **City of Vancouver, British Columbia:** Requires all dual-flush toilets sold to achieve a maximum flush volume of 1.28 gpf, regardless of whether the toilet has dual-flush capabilities.

Additional Rationale and Summary

Additional Rationale

- Consistent with U.S. Department of Energy rulemaking
- Consistent with *WaterSense Specification for Flushometer-Valve Water Closets*

Summary of Intended Changes

- Eliminate effective flush volume calculation
- Establish a singular maximum flush volume requirement for single-flush toilets and the full-flush mode of dual-flush toilets
- Remove reference to ASME A112.19.14 (as discussed previously)