



WaterSense[®] Public Meeting

Notice of Intent (NOI) for Pool Covers

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November 15, 2018

Housekeeping

- All attendees are muted to minimize background noise.
- Please type questions into the Questions box in the GoToWebinar control panel. 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.
- This PowerPoint presentation will be posted on the partner website following the call.
- 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 the research and findings about the product category
- Answer questions about the material so that interested parties can provide more precise comments
- Begin to gather information on how to fill data gaps or on additional information that may be available
- Explain the process and next steps

Generally we do not:

- Provide resolution to comments or concerns
- Agree on specifics of a specification such as scope, criteria, or test methods
- Guarantee that WaterSense will develop a specification or provide a timeline for its completion

Agenda

- Introduction to WaterSense
- Pool Covers Background
- WaterSense Notice of Intent (NOI) and Outstanding Data Gaps
 - Scope
 - Water Efficiency Criteria
 - Performance and Product Testing
 - Product Marking, Documentation, and Marketing
- Opportunities in WaterSense's Systems Approach
- Next Steps
- Questions and Discussion



Poll Question

Question: Please tell us who you are.

Do you represent a:

- Pool and/or Pool Cover Manufacturer/Retailer
- Water and/or Energy Utility
- Pool Installation/Service Professional
- Certifying Body
- Other





Part 1

Introduction to WaterSense

Why WaterSense?

2006

Water shortages expected in 36 states

Communities face major infrastructure investments

Consumers challenged by rising utility bills

Much of water used outdoors is wasted

No ENERGY STAR like program for water



Identify high-performing technology

Promote water efficient behavior/action

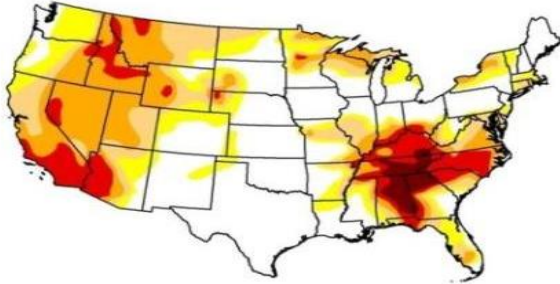
Help consumers save money

Reduce need to expand infrastructure capacity

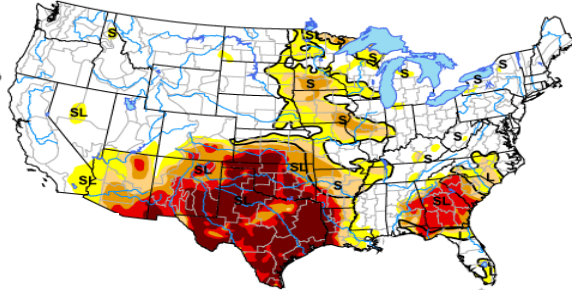
Save water for critical needs

Water Supply Reliability is a Challenge

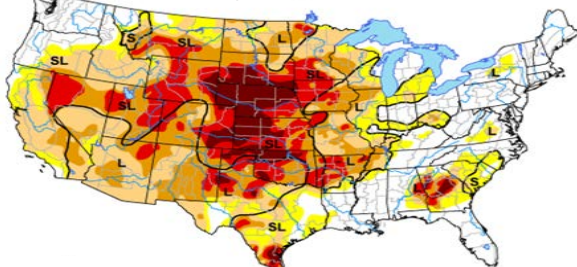
Sept. 2007



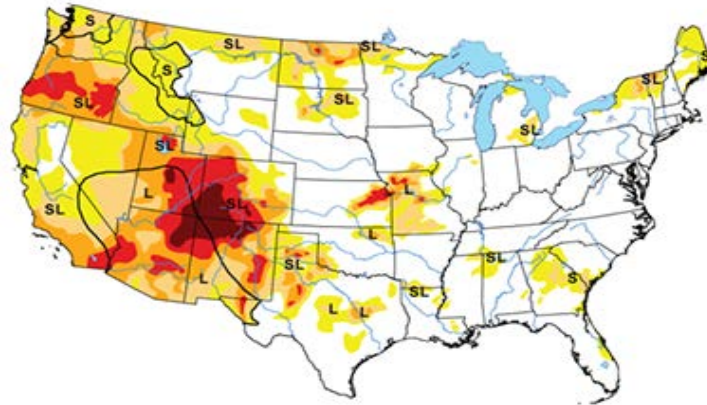
Oct. 2011



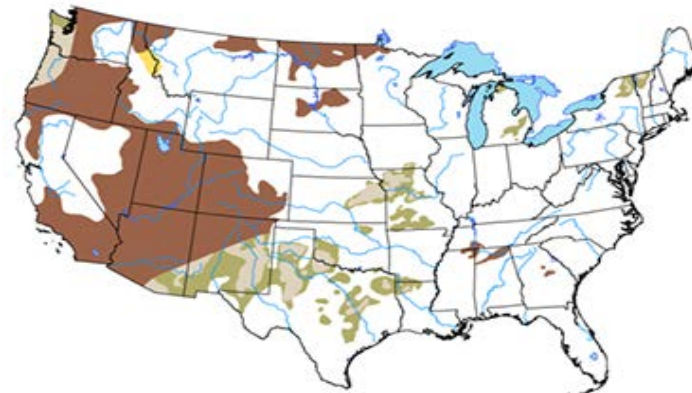
May 2013



Oct 2018



Seasonal Drought Outlook
Valid for Sept. 20 to Dec.31 2018



- Drought happens somewhere every year
- Extreme weather changes increase uncertainty and concern about water scarcity and risk
- Competition for supplies to meet public, agricultural and energy needs will increase



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



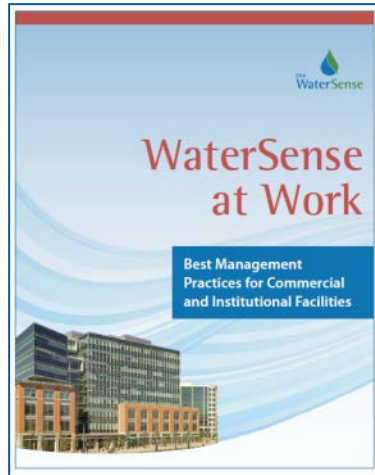
WaterSense is a voluntary partnership program launched by EPA in 2006 that provides a simple way to identify water-efficient:

- Products
- Programs
- Practices
- Homes

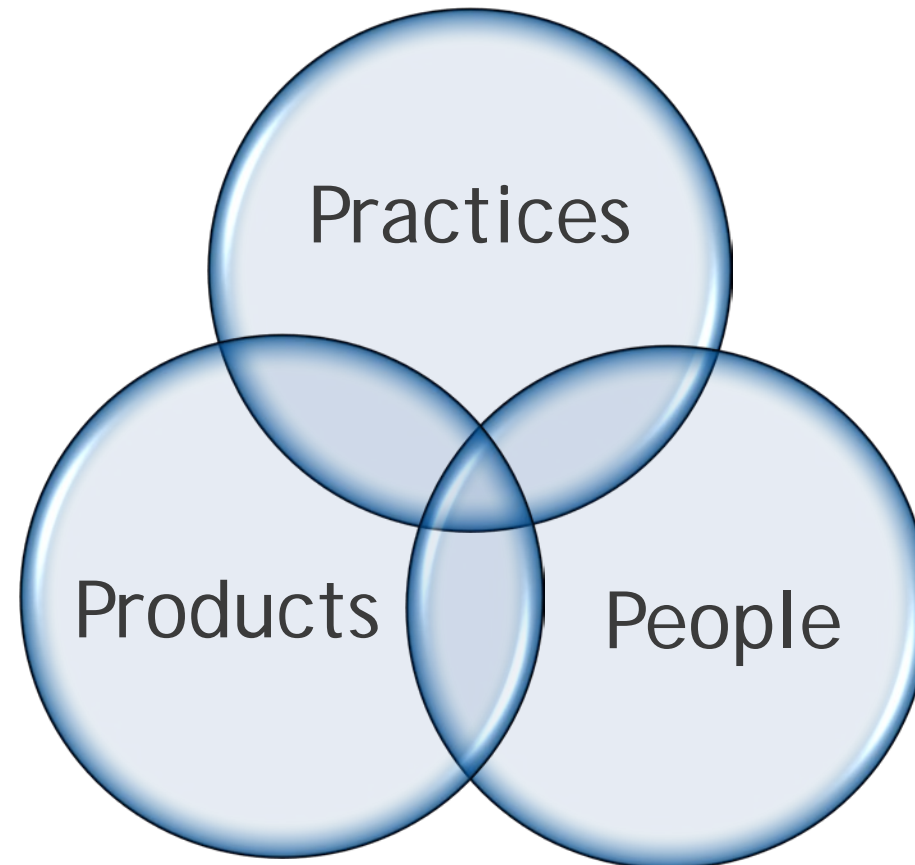


Products are independently certified for water efficiency **and** performance

WaterSense Program Overview



Actions that can be taken to reduce water use – at home, outdoors, and at work



Partners reach users to change behavior



Fixtures and technologies save water



WaterSense Product Evaluation Factors

WaterSense uses the following factors in determining which products to label. Products must:



- Offer equivalent or superior performance to conventional models
- 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 tested and independently certified

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

Simple to understand

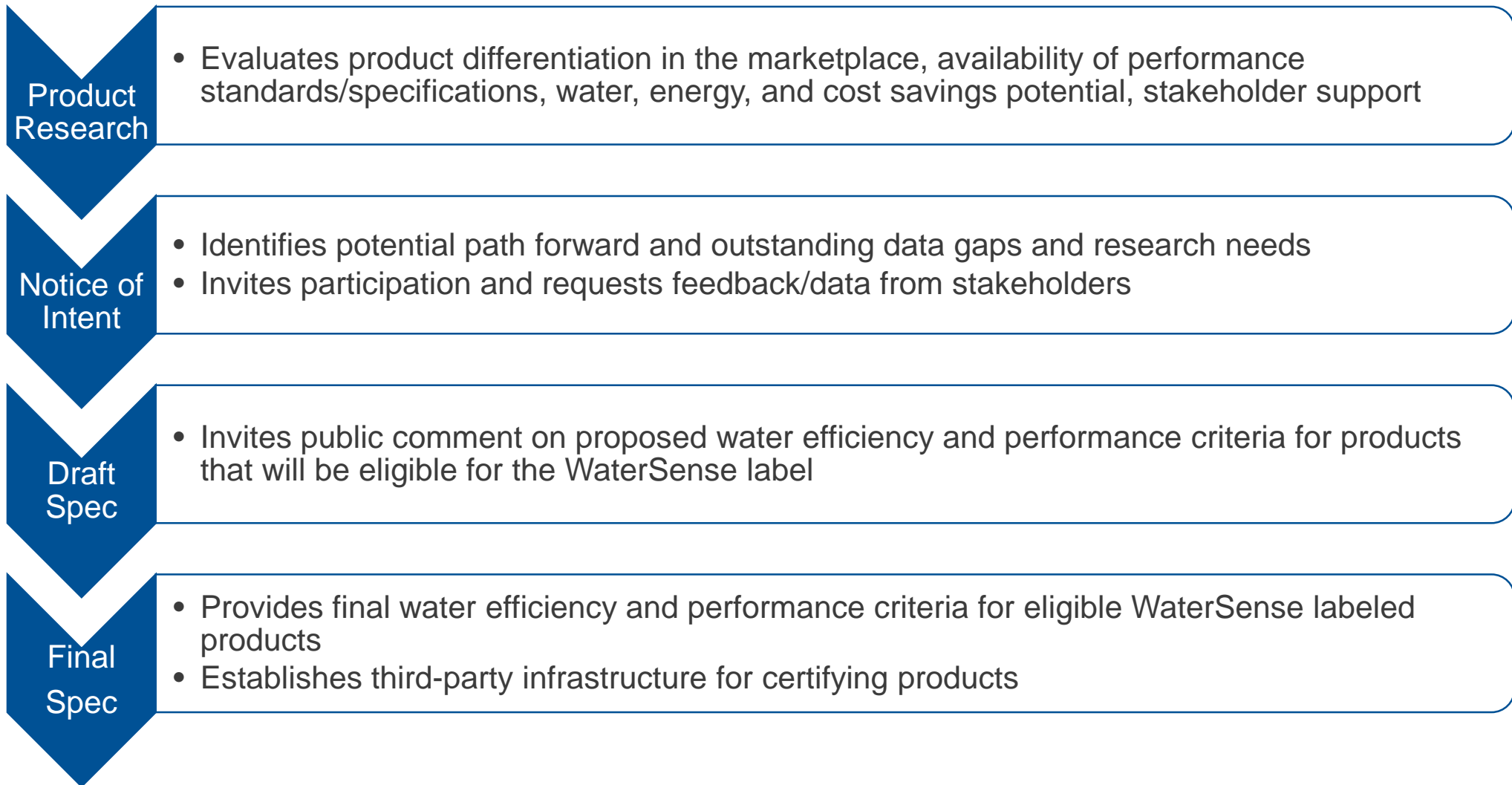
- Label tells consumer product is efficient
- Manufacturers can compete on degree of efficiency or other features

Smart use of resources

- EPA provides national standardization and outreach for water-efficiency
- Manufacturers absorb product research, testing, and branding costs
- Licensed certifying bodies certify the products and police the label
- EPA, manufacturers, retailers, and other partners help market/incentivize purchase of labeled products



Specification Development Process



Working with Standards Organizations

- Where feasible, EPA engages with existing standards committees as early in the process as possible
 - ASME/CSA – plumbing fixtures and fittings
 - ASABE – soil moisture sensors, weather-based irrigation controllers
 - ICC – landscape sprinklers
 - ASTM – test methods
- Balanced standards committees gives EPA input from testing and certifying organizations, manufacturers, water efficiency experts, utilities, NGOs and other stakeholders
- EPA leverages resources of standards committees to:
 - Identify and evaluate appropriate performance measures (based on user needs)
 - Develop test methods so that performance measures can be reliably evaluated in a laboratory
 - Conduct round robin testing to ensure test method repeatability
 - Get buy in of methods and requirements among manufacturer and certification community before publishing a draft specification



WaterSense Product Certification

Independent third-party certification is the key to bringing labeled products to market and ensuring confidence in the WaterSense brand

- EPA established the WaterSense Product Certification System in March 2009 (revised in 2011)
- The system guides certification and labeling for all WaterSense labeled products and includes:
 - Eligibility and requirements for accreditation and product certifying bodies
 - Production inspection and testing requirements
 - Requirements for issuing the WaterSense label
 - Requirements for ongoing surveillance of labeled products
 - Procedures for handling label misuse

WaterSense Labeled Products



Lavatory Faucets
Labeled since 2007
15,500 labeled models



Weather-Based Irrigation Controllers
Labeled since 2011
900 labeled models

Tank-Type Toilets
Labeled since 2007
3,500 labeled models



Flushometer-Valve Toilets
Labeled since 2015
900 labeled models



Flushing Urinals
Labeled since 2009
500 labeled models



Pre-Rinse Spray Valves
Labeled since 2013
30 labeled models

Showerheads
Labeled since 2010
7,400 labeled models

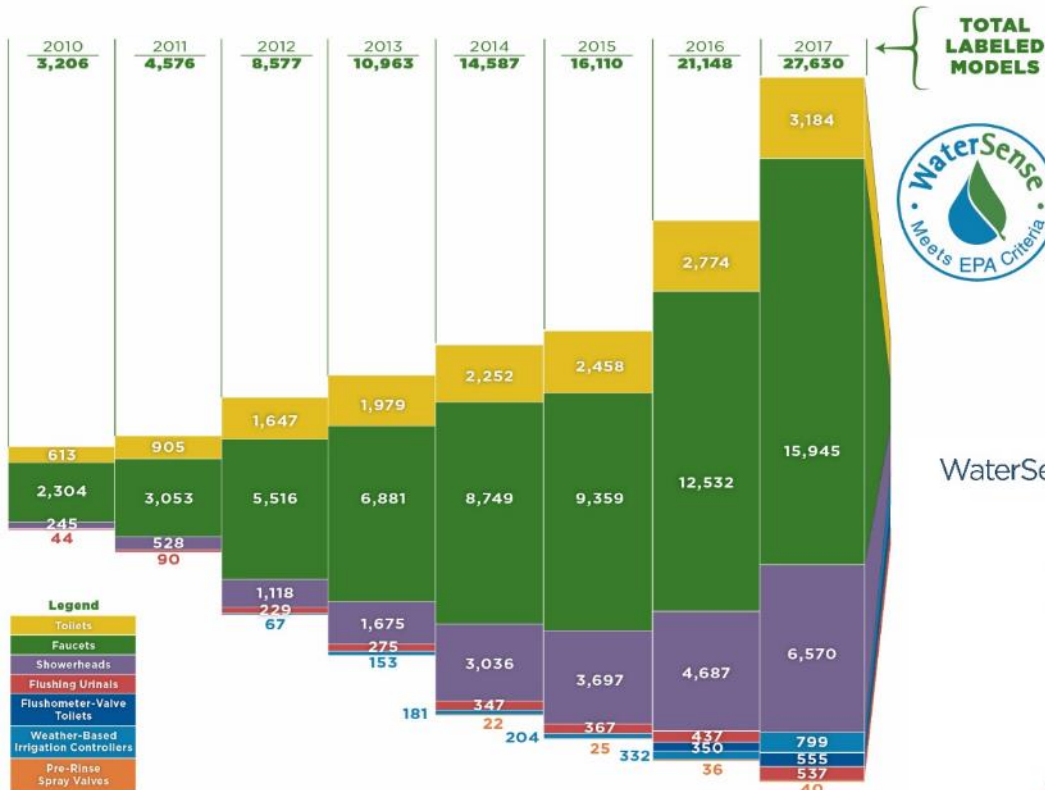


Spray Sprinkler Bodies
Labeled since 2017
85 labeled models



Accomplishments

WaterSense Labeled Products



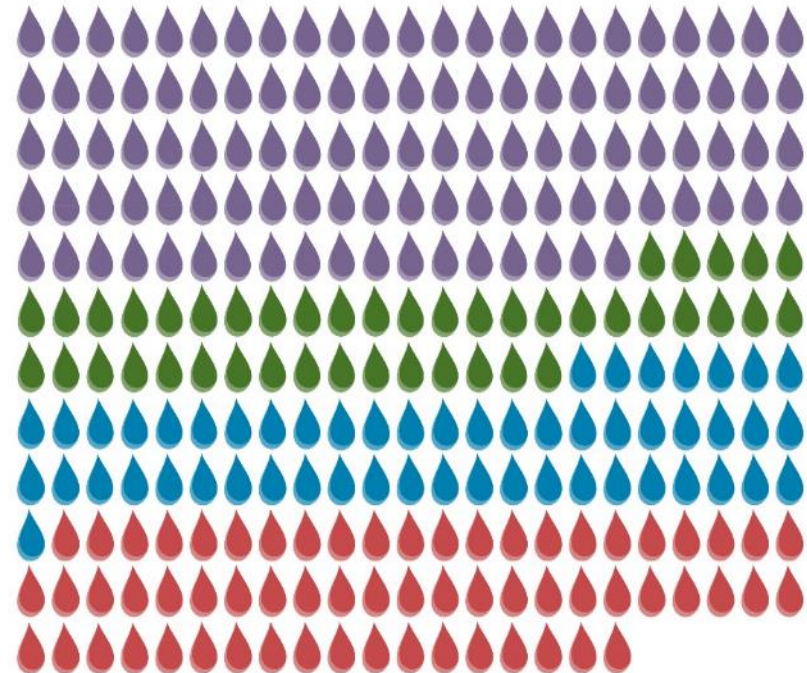
WaterSense partners helped...



...consumers save

\$63.8 billion
in water and energy bills

2.7 trillion gallons of water saved since 2006!



2007 - 2014
2015
2016
2017

631 billion
gallons saved in 2017



Part 2

Pool Cover Background

Pool Cover Background

Pool covers can be used on:

- Indoor and outdoor pools
- In-ground and above-ground pools
- Residential, institutional, and commercial pools of any size or shape

Pool covers come in many styles to serve many purposes:

- Liquid covers are designed for commercial pools with extended hours of daily use
- Winter covers protect the pool and equipment during cold weather or extended periods of disuse
- Insulative solar covers trap solar heat in the pool water and save energy
- Solid and mesh covers retain heat, prevent pool water evaporation, and keep debris out of the pool
- ASTM® certified covers provide safety protection for children and animals



Pool Cover Research

- Pool covers may be manually, semi-automatically, or automatically controlled
- All types of pool covers, when consistently applied, save water
- To explore this product's potential for water savings, EPA researched existing studies on water savings resulting from pool cover application

Cover Type	Average Efficiency (%)
Liquid Evaporation Suppressant A	14.4
Liquid Evaporation Suppressant B	15.8
Solid Track Cover	93.9
Foam Cover	95.9
Bubble Cover	94.9
Solar Rings	50.1



Poll Question

Question: For manufacturers, what type of pool cover do you manufacture?

- Automatic cover(s)
- Manual cover(s)
- Both automatic and manual covers
- Liquid cover(s)
- Not a manufacturer

Existing Standards and Test Methodologies

- Currently, the only testing methodology specifically for pool covers, ASTM F1346, pertains to safety and marking/labeling requirements
- EPA has not identified any testing methodology that gauges pool cover water efficiency, whether by reduced evaporation or total pool system water consumption
- Laboratory settings show high potential for savings from pool cover use, but realized water savings are dependent upon user behavior
- EPA has not identified any water savings studies that assessed impacts of control mechanisms

Existing Standards and Test Methodologies

ASTM F1346

- ASTM's *Standard Performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas, and Hot Tubs: F1346*
- Defines types of pool covers and requirements for certifying safety covers

NSF/ANSI 50 Standard

- NSF/ANSI's *50 Standard for Equipment for Swimming Pools, Spas, Hot Tubs and other Recreational Water Facilities*
- Establishes minimum material, design, construction, and performance requirements for pool systems; does not make any water efficiency or performance requirements specifically for pool covers but does require all pool covers to be labeled in accordance with ASTM F1346

Existing Standards and Test Methodologies

ANSI/APSP/ICC-13 Standard

- *ANSI/APSP/ICC-13 Standard for Water Conservation Efficiency in Pools, Spas, Portable Spas, and Swim Spas*
- Prescribes methods and technologies to increase the efficient use and conservation of water in existing and new municipal and residential pools.
- Requires outdoor pools to be equipped with a vapor retardant cover

ISPSC

- *International Swimming Pool and Spa Code (ISPSC)*
- The first and only international for swimming pool, hot tub, and spa design, performance, and efficiency.
- Requires heated pools and in-ground spas to be equipped with vapor retardant covers for energy efficiency, not water efficiency

Existing Standards and Test Methodologies

ASTM Standard Test Methods for Water Vapor Transmission (WVT) of Materials, Method E 96/96M

- Provides two methods to measure permeance: the Desiccant Method or the Water Method
- Method used should be selected based on the conditions of product use
- There are two variations on each method: service conditions with one side wetted, and service conditions with low humidity on one side and high humidity on the other
- Approved test method for determining water savings under Australia's WaterMark program's *Guidelines for Pool Cover Applications*

Product Market

Statistic	Inground		Aboveground		Commercial	
Total base - 2015	5,139,990		3,394,565		243,499	
Units Sold/Installed 2014	58,000		162,000		2,432	
Percentage Change 2013	4.4%		-6.4%			
Top 10 States (Installed base, total)	California	1,233,611	California	335,988	California	40,536
	Florida	1,027,846	Texas	266,785	Florida	24,774
	Texas	397,793	Florida	250,728	Texas	21,300
	Arizona	322,346	Ohio	151,738	Arizona	9,574
	New York	231,861	Illinois	148,537	Ohio	8,417
	Ohio	131,498	New York	143,566	New York	7,281
	Pennsylvania	129,776	Pennsylvania	139,629	North Carolina	7,020
	Massachusetts	124,225	Michigan	130,498	New Jersey	6,721
	Illinois	123,969	Georgia	114,601	Georgia	6,433
	Virginia	114,568	North Carolina	108,805	Pennsylvania	6,241
Top 10 States (New units, 2011)	Florida	16,392	Texas	15,712	Not reported	
	California	10,898	California	15,663		
	Texas	6,979	Florida	14,387		
	Arizona	3,882	Georgia	6,402		
	New York	2,588	New York	6,350		
	Virginia	1,511	Illinois	6,261		
	Massachusetts	1,468	Ohio	5,842		
	Maryland	1,349	North Carolina	5,679		
	Illinois	1,201	Pennsylvania	5,319		
	Pennsylvania	1,170	Michigan	4,701		

Product Data

In 2016, the Water Research Foundation determined that:

- During peak evaporation, a 500 ft² pool can lose nearly **155 gallons of water** a day
- 30.1% of pool owners reported owning a solid pool cover
- 0.4% reported owning a chemical (liquid) pool cover
- 49% solid pool cover owners apply the cover regularly (e.g., overnight), while 51% apply the cover seasonally

The U.S. Energy Information Administration's 2015 Residential Energy Consumption Survey found that, of 8.4 million pools nationwide:

- 2.7 million were used less than 3 months per year
- 4.8 million were used 4 to 7 months per year
- 900,000 were used 8 months to year-round

Product Data

The National Renewable Energy Laboratory (NREL) found that pool cover usage rates varied significantly among California, Arizona, and Florida (three states with vastly different climates). In 1999:

- 0% pools in Arizona used pool covers
- 1% of pools in Florida used pool covers
- 13% of California pools used a cover

Based on anecdotal evidence, WaterSense estimates that between 10% and 25% of existing pools nationwide currently have a pool cover.



Potential Water and Energy Losses

Estimated Individual Pool Water Losses

Pool Size	Region	Annual Pan Evaporation Rate	Annual Evaporative Water Loss	Annual Cost of Water Loss
ft ² (in ²)	--	in/year	gal/year	--
500 (72,000)	Northeast	40	12,000	\$130
500 (72,000)	Southwest	100	31,000	\$340

Energy Costs from Individual Pool Water Losses (for a heated pool)

Pool Size	Region	Annual Evaporative Water Loss	Annual Energy Loss	Annual Cost of Electricity Energy Loss	Annual Energy Loss	Annual Cost of Natural Gas Energy Loss
ft ² (in ²)	--	gal/year	kWh/year	--	Mcf/year	--
500 (72,000)	Northeast	12,000	32,000	\$4,000	110	\$1,000
500 (72,000)	Southwest	31,000	81,000	\$10,000	270	\$2,700

Other Potential System Impacts

Additional Pool Cover Benefits

- Keeps debris out of the pool, saving energy by reducing the use of pool equipment, such as pool filters and pool pumps.
- Reduced pool filtering can also contribute to additional water savings from reduced filter backwashing.
- Reduces pool cleaning and chemical use requirements.

Potential Pool Cover Considerations

- In hot climates, pool covers can trap *too much* heat in the pool water, making it too warm to comfortably swim or cool down.
- Some pools may need a cooling feature, such as a mister or pool cooler; installation and utility costs for these features may outweigh any energy or water savings from pool cover use.

NOI: Questions and Data Gaps

Technical Background

- Are additional standards, codes, or test methodologies available that specifically require pool cover use or address pool cover water efficiency or performance or durability?
- Are there any system impacts or impacts to user health and safety that would result from consistent use of solid pool covers that WaterSense has not considered?

Existing Studies

- Are data on application rates of pool covers in real-world scenarios available?
- What impact, if any, can control mechanisms have on application rates of pool covers in real-world scenarios?

NOI: Questions and Data Gaps

Product Market

- Are recent data available on the current market trends for pool installation and pool decommissioning?
- Are data available on the current ownership rates for different types of pool covers used with different control mechanisms and/or applied to different types of pools (e.g., in-ground and above-ground)?

Questions?





Part 3

WaterSense Notice of Intent (NOI)

WaterSense NOI: Scope

ASTM F1346 gives several definitions for types of pool covers, including:

- **Automatic cover**—a cover that can be placed over the water area and removed with a motorized mechanism actuated by a suitable control mechanism
- **Cover**—something that covers, protects or shelters, or a combination thereof, a swimming pool, spa, or hot tub
- **Manual cover**—cover that is required to be placed over the water area by hand

The *ISPSC* defines Safety Covers as:

- A structure, fabric or assembly, along with attendant appurtenances and anchoring mechanisms, that is temporarily placed or installed over an entire pool, spa, or hot tub and secured in place after all bathers are absent from the water

WaterSense NOI: Scope

- Industry definitions helped shape the definition WaterSense is considering using for a potential draft specification for pool covers
- WaterSense intends to define a ‘pool cover’ as “a cover which can be placed over the water area of a swimming pool and is intended for use during the open swim season.”
- WaterSense is considering excluding
 - Winter pool covers
 - Standalone companion products such as rollers or reels

NOI: Questions and Data Gaps

Scope

- Are there any accepted industry or regulatory definitions in addition to those discussed previously of which WaterSense should be aware?
- Are any data or controlled studies available on companion products that directly impact the water efficiency and/or performance of pool covers?

NOI: Questions and Data Gaps

Scope

- WaterSense intends to define a pool cover as “a cover which can be placed over the water area of a swimming pool and is intended for use during the open swim season.”
 - Is this definition and scope appropriate and sufficient for use in a draft specification?

Poll Question

WaterSense intends to define a ‘pool cover’ as:

“a cover which can be placed over the water area of a swimming pool and is intended for use during the open swim season.”

Question: Is this definition sufficient in effectively identifying the scope of a WaterSense specification?

- Yes
- No
- Need more information

WaterSense NOI: Water Efficiency

- The CalPoly study demonstrated that different types of solid pool covers, when constantly applied, can reduce evaporation by approximately 95 percent
- WaterSense is considering establishing labeling criteria that would require solid pool covers to reduce evaporation by at least 80 percent, in comparison to the same open vessel
- WaterSense is considering requiring that water efficiency be gauged with ASTM E96, Water Test method
- 80 percent and stipulation of the ASTM E96 Water Method are both consistent with Australia's Smart WaterMark program Guidelines for Pool Cover Applications

NOI: Questions and Data Gaps

Water Efficiency

- WaterSense intends to establish water efficiency criteria for pool covers to reduce evaporation at 80 percent. Is this limit reasonable?
- Is ASTM E96 sufficient as a test method for evaluating pool cover water efficiency?
- Are information and data available that describe the relationship between the percentage of coverage of pool water surface a pool cover provides and the produced reduction in evaporation? How could WaterSense calculate an evaporation reduction factor based on percent pool coverage?

Poll Question

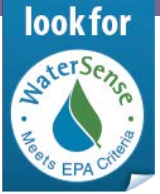
Question: Is the proposed 80 percent efficiency threshold a reasonable criteria to establish for a WaterSense specification?

- Yes
- No
- Need more information



WaterSense NOI: Performance and Product Testing

- Currently, pool covers may be certified as safety pool covers by meeting the safety requirements established in ASTM F1346
- Many states and municipalities require a safety barrier for residential pools. Pool owners are often offered options including:
 - A safety pool cover;
 - A locking fence or wall around the pool perimeter; or
 - Self-latching locks on all doors and accesses ways to the pool area.
- These barrier options are intended to inhibit their access to pool water and provide a measure of safety to prevent children and animals from drowning



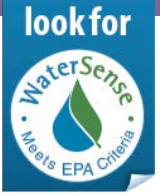
WaterSense NOI: Performance and Product Testing

- Lifecycle testing of products ensures water savings throughout the lifetime of the product
- None of the standards or test methods that EPA is aware of defines a product lifespan or a unit of measurement for a lifespan (e.g., years, number of uses) for a pool cover
- With a definition for a product lifespan, WaterSense may choose to establish testing limits that ensure at least 80 percent water savings from pool cover use upon both cover installation **and** the end of its useful life

NOI: Questions and Data Gaps

Performance and Product Testing

- Should WaterSense require ASTM F1346 certification as a safety pool cover as performance criteria in a draft specification?
- Is there an industry accepted definition of pool cover lifespan and/or units of measurement (e.g., years, number of uses) for solid pool covers of all types? Are there any test methodologies or durability tests that evaluate pool covers or similar products' lifespans?
- Are there any additional factors to consider in product performance that should be addressed within a draft specification?



WaterSense NOI: Product Marking, Documentation, and Marketing

- ASTM F1346 requires solid pool covers, and some packaging, be marked with appropriate manufacturer, warning, and safety labels
- ASTM F1346 also requires pool covers be labeled with a life expectancy but does not stipulate a limit or an expectation
- Many standards and codes defer to ASTM F1346 for their labeling requirements
- There are no known labeling requirements related to water efficiency
- No known product packaging currently advertises pool cover water efficiency or ability to reduce evaporation



NOI: Questions and Data Gaps

Product Marking, Documentation, and Marketing

- What are reasonable ways to mark products, product packaging, and associated documentation and content with which to mark pool covers to indicate their water efficiency benefits?

WaterSense NOI: Stakeholder Engagement

- WaterSense has identified many utility rebate programs for pool covers offered by a range of water utilities, mainly in states with high rates of pool ownership
- WaterSense intends to develop a draft specification, in part, to draw attention to uncovered pools as sources of significant water loss and to promote consistent application of pool covers to utilities, home builders, pool professionals, and consumers

NOI: Questions and Data Gaps

Stakeholder Engagement

- How can WaterSense engage utilities and pool professionals in sharing approaches to raise consumer awareness of pool covers and their impacts on water efficiency?

Questions?



Part 4

Opportunities Within the WaterSense Systems Approach

WaterSense Systems Approach

Goal: To identify and research “influencers” of water use within a system.
Influencers include:

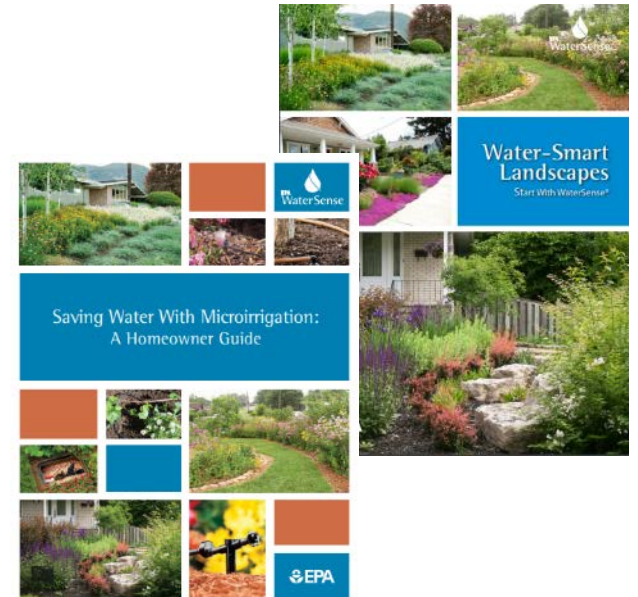
1. System design
2. Components
3. Operations and maintenance staff
4. Codes and standards
5. Utilities

WaterSense developed its systems approach with water-efficient outdoor irrigation products.

WaterSense Systems Approach

1. Design

- *Water-Smart Landscapes Guide*
- *Microirrigation Guides for Homeowners and Irrigation Professionals*
- *WaterSense at Work*



2. Components

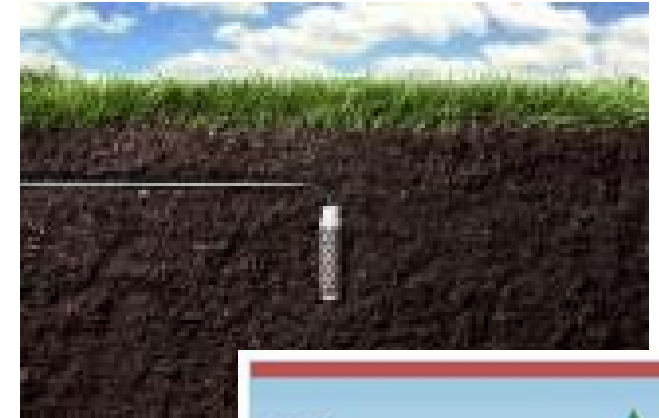
- *WaterSense Specification for Weather-Based Irrigation Controllers*
- *WaterSense Specification for Spray Sprinkler Bodies*



WaterSense Systems Approach

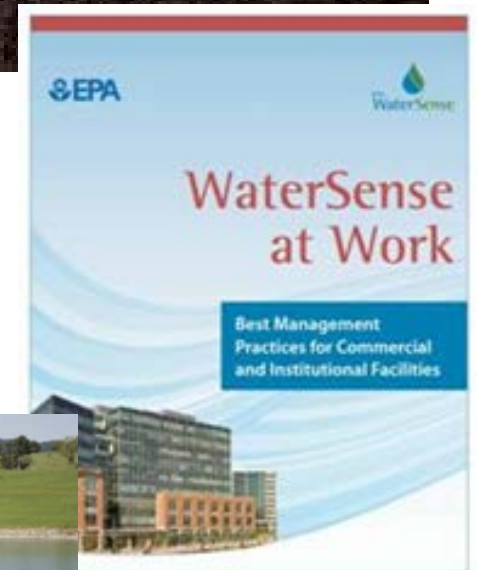
2. Components (continued)

- Developing a specification for soil moisture-based control technologies
- *WaterSense at Work*



3. Operations and Maintenance Staff

- Irrigation professionals certified by WaterSense labeled program (design, installation and maintenance, auditing)
- Webinar trainings on irrigation and landscaping
- *WaterSense at Work*



4. Codes and Standards

5. Utilities





Potential Options for WaterSense

- Under the systems approach, WaterSense could address water efficiency of pools through the following options:
 1. Water-efficient pool systems design guide
 2. Specification for pool covers
 3. Specification for pool filters (if product research confirms this is an appropriate approach and demonstrates water savings)
 4. Labeling professional certification programs for pool system design and maintenance professionals that teach and promote water efficiency
- Pool covers are already encouraged in WaterSense at Work

NOI: Questions and Data Gaps

Systems Approach

- Are data available on the impact pool cover application has on pool filter use and pool refilling rates, or on total pool system water savings and the interplay of pool system components?
- Are there are additional factors in pool system performance resulting from pool cover application that should be addressed within a draft specification?
- Are data available on other pool equipment that impact water use, design guides, or professional programs that address water use?
- Are stakeholders interested in possible program areas, such as labeling professional certification programs or pool system design guides?

Poll Question

Question: Would you be interested in any of the following, beyond a specification for pool covers? Select all that apply:

- Water-efficient pool systems design guide
- WaterSense specification for pool filters
- Certification or training material for pool professionals
- Not interested in any of the above
- Need more information



Next Steps

- NOI can be reviewed at www.epa.gov/watersense/pool-covers
- Submit written comments or additional information and data to watersense-products@erg.com
- EPA will review comments and data submission to determine next steps for developing a draft specification

Contact Us



General E-mail: watersense@epa.gov

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

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