

Photo: Rory Doyle/There is More Work to be Done

# Water Sense Labeled Homes Version 2.0



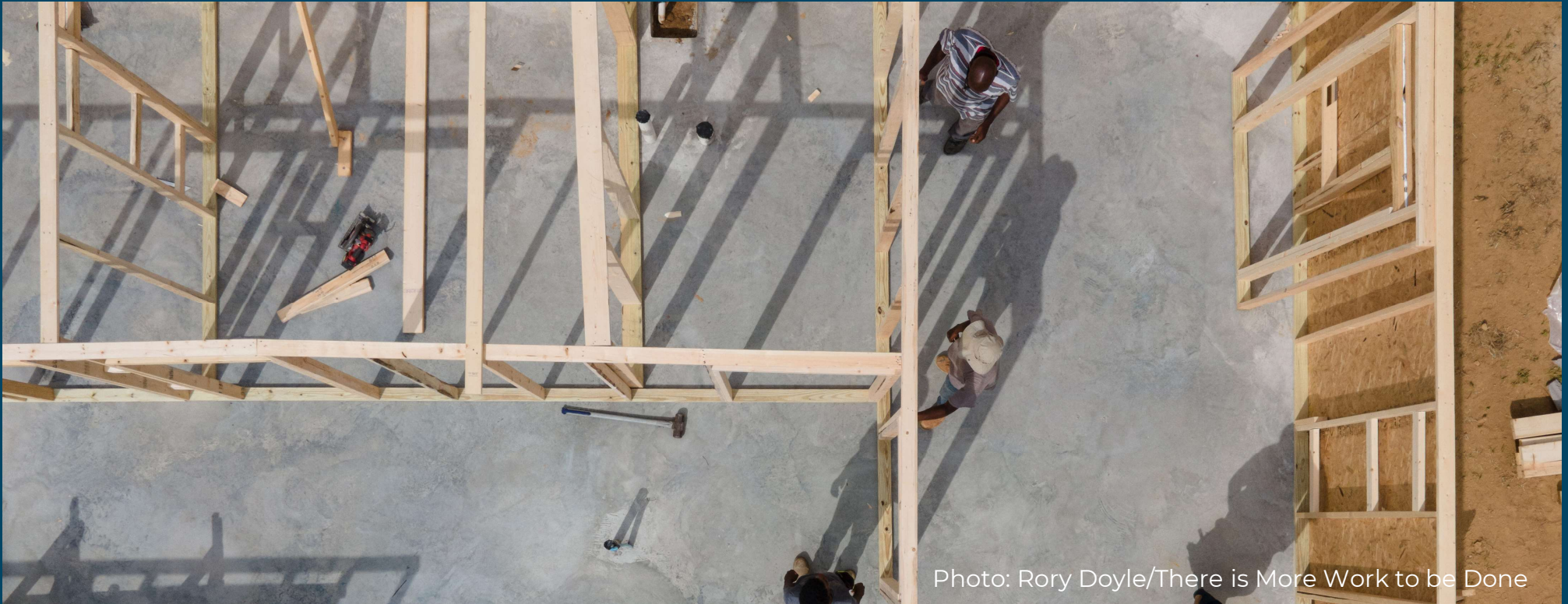


Photo: Rory Doyle/There is More Work to be Done

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WaterSense®

# WaterSense V2.0: flexibility and water-efficiency options



Housing Assistance Council Webinar

Olga Cano, U.S. EPA

July 2021



# Webinar Overview

- Introduction to WaterSense
- WaterSense Labeled Homes Program, Version 2
  - History of the Revision
  - Stakeholders
  - Technical and Organizational Requirements
- Information for WaterSense Home Verifiers
- Next Steps



# Introduction to WaterSense

# WaterSense

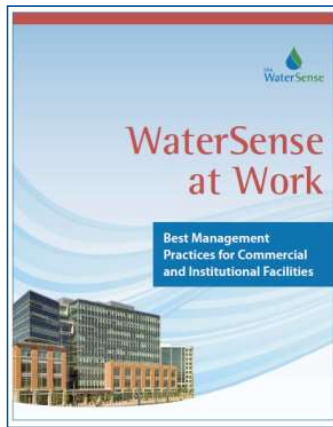
- EPA launched WaterSense in 2006 as a voluntary program that provides a simple way to identify water-efficient:
  - Products
  - Programs
  - Practices
  - Homes
- Products and homes are independently certified for water efficiency and performance



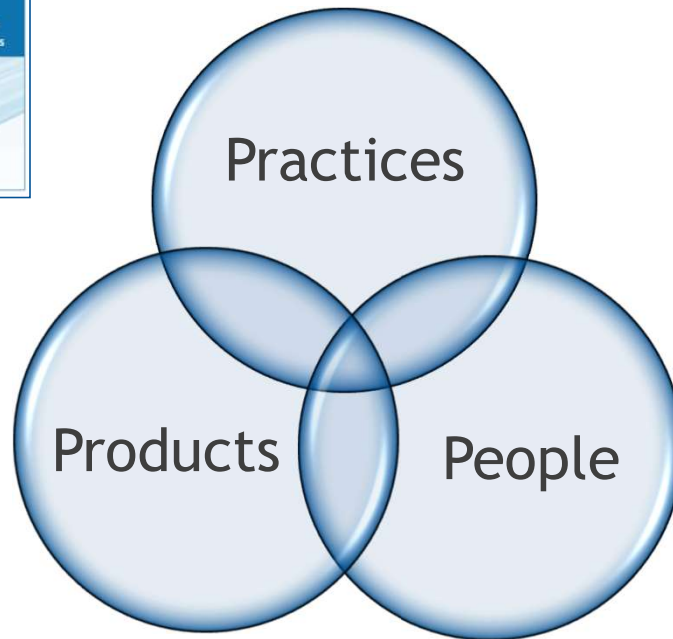




# How Does WaterSense Work?



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



Fixtures and technologies save water



Partners reach users to change behavior





# WaterSense Labeled Products

- Third-party certified for both efficiency AND performance
- Establish the principle of independent oversight as a foundational philosophy of the program
- Include indoor and outdoor products



**Lavatory Faucets**



**Showerheads**



**Tank-Type Toilets**



**Flushometer-Valve Toilets**



**Flushing Urinals**



**Irrigation Controllers**



**Spray Sprinkler Bodies**

**More Than 37,000  
WaterSense Labeled  
Product Models**



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



# Professional Certification Programs

- WaterSense has three specifications for irrigation professional certification programs covering:
  - Irrigation system designers
  - Irrigation system auditors
  - Irrigation system installation and maintenance professionals
- As of 2019, more than 2,800 irrigation professionals have been certified by a WaterSense labeled program



[www.epa.gov/watersense/find-pro](http://www.epa.gov/watersense/find-pro)

# WaterSense Labeled Homes Program



WaterSense labeled homes allow EPA to:

- Promote water efficiency in homes (including places where product solutions are insufficient)
- Communicate the value and benefits of WaterSense labeled products
- Provide quantifiable water savings for individual homeowners and utilities





# WaterSense Labeled Homes








- National new home label to comprehensively address water efficiency
- Recognizes homes that are at least 30 percent more water-efficient relative to typical new construction
- Independently certified homes
- Designed to align with other EPA certification programs (e.g., ENERGY STAR Certified Homes Program) so homes can receive multiple certifications
- Backed by the credibility of the EPA



# Residential Water Use in the United States

- Residences in the United States account for approximately 26.6 billions gallons of water use per day
  - Average domestic use of 82 gallons per person per day
  - In 2020, 991,000 single-family homes and 389,000 multifamily units were constructed in the U.S.
  - WaterSense hopes to increase the percentage of homes that are certified under this new version.
- On average, 70 percent of water is used indoors and 30 percent is used outdoors
  - Outdoor water use may be higher in Southwest and other arid regions

- Toilets, faucets, showers, clothes washers, and leaks account for the most indoor water use

							
Toilet <b>24%</b> 33.1 gphd	Shower <b>20%</b> 28.1 gphd	Faucet <b>19%</b> 26.3 gphd	Clothes washer <b>17%</b> 22.7 gphd	Leak <b>12%</b> 17.0 gphd	Other* <b>4%</b> 5.3 gphd	Bath <b>3%</b> 3.6 gphd	Dishwasher <b>1%</b> 1.6 gphd

\* The "Other" category includes evaporative cooling, humidification, water softening, and other uncategorized indoor uses.

Source: Water Research Foundation  
*Residential End Uses of Water, Version 2*

# Water Matters to the Building Industry



- Cost of water increasing
  - Average cost of water is rising and is likely to continue to rise
  - Increases are largely driven by capital infrastructure spending
- Being responsible stewards of water is an important part of the building industry's social license to operate
  - New homes frequently bear a large part of the conservation burden because they represent a substantial new demand to the community
- Water is an increasingly important part of the land entitlement process
  - Availability of water/service connections is frequently the deciding factor in a site's viability
- Corporate disclosure and reporting
  - Investors are increasingly interested in these issues as a potential risk to business operations (for financial and environmental, social, and corporate governance reasons)

# The Building Industry Matters to WaterSense



- Lots of savings built in from the start
  - Target maximum savings for smallest incremental cost through new construction and renovations
  - Achieve savings throughout the life of the home
- The building industry is an important consumer of labeled products
- Value of whole-house building science approach
  - Addresses aspects of home's systems (plumbing, irrigation, etc.) that are not covered by product labeling
  - Adaptive to climate and market considerations
  - Provides a template for continued savings beyond product replacement
  - Uses onsite verification and quality assurance to increase confidence and durability of savings

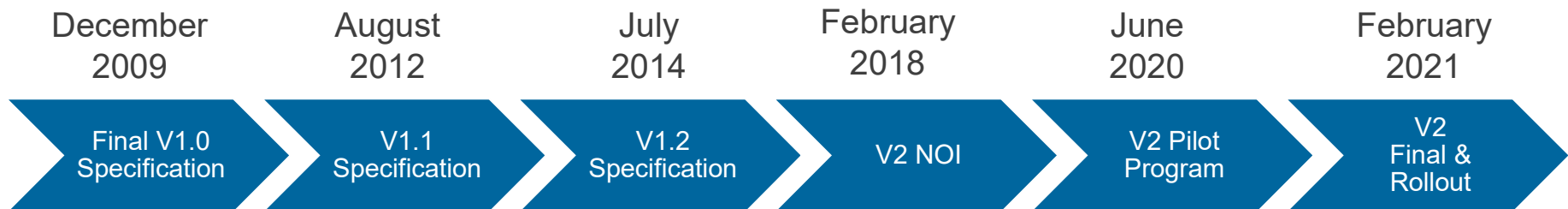




# WaterSense Labeled Homes Program, Version 2



# History of WaterSense Labeled Homes Program



- WaterSense Labeled Homes Program, Version 2
  - Released in February 2021
  - Contains minimal changes from Version 2 draft based on feedback from the pilot
  - So far, two Home Certification Organizations (HCOs) approved:
    - Residential Energy Services Network (RESNET)
    - Home Innovation Research Labs (Home Innovation)



# Version 2 Pilot

- Multiple parties were eager to start using Version 2
  - Provided an opportunity for proof of concept
  - Explored consumer satisfaction with different products and technologies
  - Created smoother transition from Version 1 to Version 2
- RESNET served as HCO using the HERS<sub>H2O</sub> program
- Homes earned the WaterSense label based on the draft Version 2 Mandatory Checklist and a HERS<sub>H2O</sub> score  $\leq 70$
- Key feedback
  - Achieved desired flexibility
  - Adds 30 to 60 minutes to existing rating process
  - Identified several procedural improvements



First WaterSense labeled home under Version 2, built by KB Home



# Stakeholders

<p><b>Home Certification Organization (HCO)</b></p> 	<ul style="list-style-type: none"><li>• Independent organization approved and licensed by EPA to certify and label homes</li><li>• Responsible for ensuring quality assurance, verifier training and authorization, impartiality, and reporting</li><li>• Responsible for administering a WaterSense Approved Certification Method (WACM), among other things</li></ul>
<p><b>WaterSense Home Verifier</b></p> 	<ul style="list-style-type: none"><li>• Individual who is trained and authorized by an HCO (or its designee) to verify homes in accordance with the <i>WaterSense Specification for Homes</i> and the HCO's WACM</li></ul>
<p><b>Home Builder Partner</b></p> 	<ul style="list-style-type: none"><li>• Signs partnership agreement with EPA</li><li>• Commits to building WaterSense Labeled Homes</li></ul>



# Important Terminology

- **Proposed Certification Method (PCM) and WaterSense Approved Certification Method (WACM)**
  - Each prospective HCO submits a PCM with its application
  - A PCM becomes a WACM upon technical evaluation and approval from WaterSense
  - WACM is the methodology used to evaluate a home's compliance with the water efficiency requirement in the *WaterSense Specification for Homes, Version 2.0*

# WaterSense Labeled Homes Program, Version 2 Documents



- *WaterSense Specification for Homes, Version 2.0*
  - Includes technical requirements that homes must meet to earn the WaterSense label, including the Mandatory Checklist and the water efficiency requirement
- *WaterSense Home Certification System, Version 2.0*
  - Outlines organizational requirements an HCO must meet to certify homes for WaterSense
  - Describes requirements for and process by which EPA will evaluate an HCO's Proposed Certification Method (PCM)
  - Defines the requirements, roles, and responsibilities for all parties involved in the construction, verification, certification, and labeling of homes
- *WaterSense Technical Evaluation Process for Approving Home Certification Methods*
  - Calculations and assumptions EPA uses to evaluate an HCO's PCM
- *WaterSense Specification for Homes Supporting Statement*
  - Documents the rationale of the program structure and major program elements

[www.epa.gov/watersense/homes-specification](http://www.epa.gov/watersense/homes-specification)

# Process to Label Homes

1. Home builder partners work with a WaterSense home verifier/HCO to understand requirements of the WaterSense specification
2. WaterSense home verifiers confirm homes meet WaterSense specification requirements
3. HCO issues WaterSense label to homes that have met WaterSense specification requirements

look for





# Technical and Organizational Requirements





look for



# WaterSense Requirements for Homes

- Meet all elements of the **Mandatory Checklist for WaterSense Labeled Homes**
- Must be **30 percent more water-efficient** than a home with characteristics typical of new construction



# Mandatory Checklist

- Must be completed for all WaterSense labeled homes regardless of HCO/WACM
- Ensures that all WaterSense labeled homes contain a minimum set of features that meet homeowners' expectations for performance
- Criteria for checklist features
  - Basic measure of quality performance not represented by volumetric use
  - Universally applicable to homes regardless of market or climate
  - Easily attainable at little or no incremental cost
- Two categories reflected in the Mandatory Checklist
  - Verification that home is free of water leaks
  - WaterSense labeled plumbing products



# Mandatory Checklist

Item	Requirements	Confirmed
Leaks	Pressure-loss test on all water supplies detects no leaks	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from toilet(s), as determined through visual assessment and by conducting a dye tablet test in each toilet to ensure the flapper is not leaking	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from bathroom faucet(s)	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from showerhead(s)	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from bathroom tub faucet(s), i.e., tub spout(s), when showerhead(s) is activated, as determined through visual assessment after showerhead has been activated for one minute	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from kitchen and other sink faucet(s)	<input type="checkbox"/> Yes <input type="checkbox"/> No
	Free of visible leaks from other fixtures or appliances (e.g., water heaters, clothes washers, dishwashers, hose bibbs, irrigation systems) at point of use or point of connection to water distribution system	<input type="checkbox"/> Yes <input type="checkbox"/> No
Toilets	WaterSense labeled*	<input type="checkbox"/> Yes <input type="checkbox"/> No
Bathroom sink faucets	WaterSense labeled*	<input type="checkbox"/> Yes <input type="checkbox"/> No
Showerheads	WaterSense labeled*	<input type="checkbox"/> Yes <input type="checkbox"/> No

\*A listing of WaterSense labeled toilets, bathroom sink faucets and showerheads can be found at: [www.epa.gov/watersense/product-search](http://www.epa.gov/watersense/product-search).



## What About Outdoors?



- Outdoor requirements may not appear on the checklist, but *this doesn't mean they aren't included in the program*
- Checklist only intended to include universal items
- Homes in dry regions are unlikely to meet efficiency requirement without incorporating outdoor measures
- Allows builders to incorporate features most appropriate to the region
- Can be required or incentivized by an HCO's approved methodology



# Water Efficiency Requirement

- Home must be at least 30 percent more water-efficient than a home with characteristics typical of new construction (comparison based on national standards and common design and landscape practices)
  - Does not preclude or disadvantage homes in states with more efficient codes from participating
  - Maintains water savings compared to Version 1 of the program
  - Establishes a level that, while rigorous, is still universally achievable in all markets and climates using proven water efficiency practices
  - Provides a balance of indoor and outdoor measures that scale appropriately with climate



# How EPA Measures 30 Percent

- EPA allows HCOs to develop their own method of measuring water use
  - Works within the existing framework of potential HCOs
  - Protects the integrity of the WaterSense Labeled Homes Program and ensures that certified homes meet the 30 percent efficiency threshold
- EPA retains the role of reviewing and approving each HCO's method
  - Technical evaluation protocol is available on EPA's website and defines the process and assumptions WaterSense will use to assess Proposed Certification Method (PCMs)
  - Involves a stress test for the HCO's PCM and certification threshold where a series of reference homes are compared
  - HCO's application determines the scope of evaluation (geographic area, single-family or multifamily, etc.)



# Considerations of Technical Evaluation

EPA considers the following features as part of its technical evaluation:

Indoor	Outdoor
<ul style="list-style-type: none"><li>• Toilets</li><li>• Showerheads</li><li>• Lavatory faucets</li><li>• Kitchen faucets</li><li>• Clothes washers</li><li>• Dishwashers</li><li>• Bathtubs</li><li>• Hot water delivery/recirculation system</li><li>• Thermostatic shutoff valves in showers</li><li>• Leaks and leak detection systems</li><li>• Other (if applicable)</li></ul>	<ul style="list-style-type: none"><li>• Plant type(s) (i.e., turf, shrub/ornamentals, xeriscape)</li><li>• Irrigation type(s) (i.e., spray or microirrigation)</li><li>• WaterSense labeled spray sprinkler bodies (with internal pressure regulation) or pressure-regulating valve</li><li>• Irrigation scheduling technologies, including:<ul style="list-style-type: none"><li>• WaterSense labeled weather-based irrigation controller</li><li>• Soil moisture-based irrigation controller (soil moisture sensor)</li><li>• Rain shutoff device (rain sensor)</li></ul></li><li>• Efficient irrigation design or professional irrigation audit</li><li>• Residential Irrigation Capacity Index (RICI) score</li></ul>



# HCO Organizational Requirements

- Prospective HCOs apply to WaterSense for approval using the *Application for Home Certification (HCO) and Prospective Certification Method (PCM) Approval*
- EPA evaluates three main areas:
  - HCO organizational requirements
  - Certification method development process
  - PCM technical evaluation



[www.epa.gov/watersense/homes-certification](http://www.epa.gov/watersense/homes-certification)





# HCO Organizational Requirements

- Prospective HCO submit documentation addressing six pillars of organizational requirements
  1. Independent oversight
  2. Quality assurance
  3. Verifier training and authorization
  4. Home verification protocols
  5. Impartiality
  6. Messaging and reporting
- Documentation can include, but is not limited to, standard operating procedures (SOPs), written policies, contracts, or other guiding documents used by the HCO



# Certification Method Development

- The HCO shall demonstrate that the PCM requirements were developed following an open and transparent process following one of three approaches:
  - Utilize an ANSI approved standard (or equivalent)
  - If HCO is a public agency, follow requirements for the jurisdiction having authority
  - Demonstrate development in accordance with alternative requirements based on the ANSI Essential Requirements



# Current WaterSense HCOs



# Approved Certification Requirements

HCO		WACM	System Type	Certification Threshold	Types of Homes	Geographic Scope
RESNET		HERS <sub>H2O</sub>	Performance rating system	≤ 70*	New/existing single-family	National
Home Innovation Research Labs	Prescriptive Path	NGBS Green WaterSense Checklist	Prescriptive checklist	All checklist items	New/existing single-family & multifamily homes	National
	Performance Path	NGBS Green Water Rating Index (WRI)	Performance rating system	≤ 64*	New single-family & multifamily homes	National

\*On these rating systems, *lower* is better. 0 = net zero use and 100 = reference home water use.



# HCO Representatives

- RESNET: Ryan Meres, Programs Director



- Home Innovation Research Labs: Cindy Wasser, Senior Manager, Green Building Programs



# Sample WACM Scores



Results will vary  
from home to home  
based on size,  
climate, and  
features.

## Sample home:

- Minneapolis, Minnesota
- 2,400 ft<sup>2</sup>, 4-bedroom home
- 4,000 ft<sup>2</sup> lot
- **1.28 GPF** WaterSense labeled toilets
- **1.2 GPM** WaterSense labeled lavatory faucets
- **1.5 GPM** kitchen faucet
- **2.0 GPM** WaterSense labeled showerheads
- Efficient hot water distribution
- ENERGY STAR certified dishwasher
- **3.8 IWF** ENERGY STAR certified clothes washer
- 1,600 ft<sup>2</sup> landscaped outdoor area
  - WaterSense labeled spray sprinkler bodies
  - WaterSense labeled weather-based irrigation controller
  - System installed and commissioned by a professional certified by a WaterSense labeled program

HI Prescriptive  
Path: **Pass**

RESNET/HERS<sub>H2O</sub>:  
**69**

HI Performance  
Path/Water  
Rating Index: **64**



# WaterSense Home Design

look for



# Various design components & systems



### FASTER HOT WATER

Efficient plumbing distribution systems get hot water to the tap faster, so you waste less time, water, and energy.



### SAVINGS THAT PERFORM

WaterSense labeled fixtures are independently certified to use less water and perform as well or better than standard models. Dishwashers and clothes washers, if included, are ENERGY STAR® certified.



### PEACE OF MIND

Trained professionals conduct independent inspections to ensure that WaterSense labeled homes meet EPA's specification criteria, so you can be sure the homes perform well and save water.



### OUTDOOR EASE

High-performing landscapes are designed to be low-maintenance and water-efficient without sacrificing curb appeal. If an irrigation system is installed, WaterSense labeled irrigation controllers help homeowners water smarter.





# Efficient Hot Water Distribution



**WHAT:** Reduce the waiting time for hot water by designing and constructing cost-effective plumbing systems that save water and energy while increasing customer satisfaction.



**WHY:** Heating water is typically the second largest use of energy in a home (after space heating and cooling). Careful planning and thoughtful design/selection can result in efficient distribution systems without significantly increasing costs or installation time. A high-performing plumbing system ultimately saves the homeowner money and allows builders to deliver a better product to their customers.



**HOW:** WaterSense labeled homes minimize water loss by storing no more than 0.5 gallons of water between the hot water source and any hot water fixture. The hot water source is typically a water heater, but it can also be a demand-initiated recirculation line.



# System Design Options

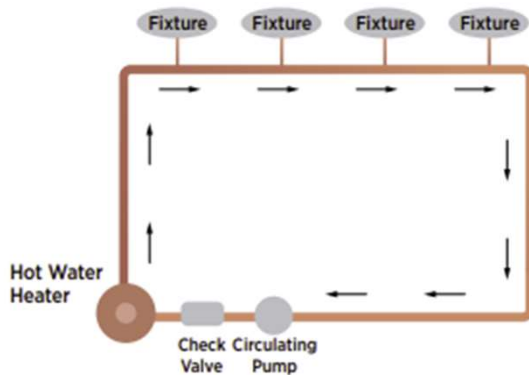
**If**

**Smaller or larger** home with many fixtures **not centrally located**

**Then**

## DEMAND-INITIATED RECIRCULATION

Piping runs directly from loop to individual fixtures that are within 10 feet



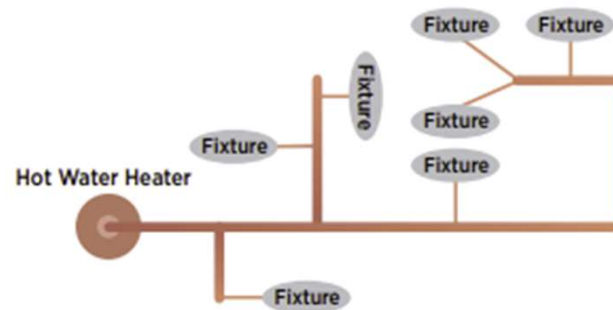
**If**

**Smaller** home with **fewer** fixtures in close proximity

**Then**

## TRUNK AND BRANCH

Main trunk supplies water to farthest fixture with individual fixtures connected to main trunk



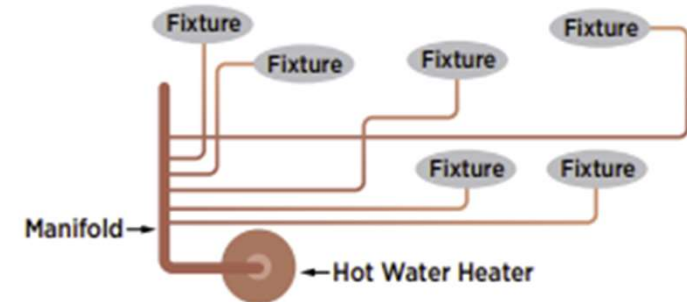
**If**

**Larger** home with **many** fixtures

**Then**

## WHOLE-HOUSE MANIFOLD

Piping runs from manifold to individual fixtures





# Efficient Outdoor Design



**WHAT:** Provide homeowners with attractive and water efficient landscapes that are easy to maintain.



**WHY:** On average, single-family homes in the United States use 30 percent of their water outdoors. In some hotter and drier areas of the country, that number is as high as 70 percent! Regionally appropriate landscapes can also help homeowners cope with drought and comply in times of local watering restrictions.



**HOW:** The WACMs addresses outdoor water efficiency through a combination of appropriate landscape design and efficient irrigation systems.



# Verifiers

# Procedures for Verifiers

- Approved verifiers in good standing will be referred to as WaterSense home verifiers
  - Note that verifiers are *not* WaterSense partners
- Designated with a new promotional mark
- Listed on the WaterSense Verifier Search Tool
- HCOs are responsible for training and approving verifiers, and providing information on verifiers to EPA
- Verifiers will verify homes seeking the WaterSense label in accordance with the specification and the HCO's WACM



# WaterSense Find a WaterSense Home Verifier

CONTACT

look for



WaterSense and its approved home certification organizations (HCO) jointly maintain the Directory of Home Verifiers. Updates to the directory are made quarterly and reflect the best information available at the time. Individuals listed in the directory have been trained and authorized by an HCO to verify homes in accordance with the WaterSense Specification for Homes.



Will be searchable by

- Name
- Company
- Location
- HCO

Reset ZIP Code Only

Search by ZIP Code <sup>?</sup>

Enter ZIP Code  Search

25 Miles

Verifier/Company Name

Enter a Keyword  Add

State (1 selected)

- All
- Alabama
- Alaska
- Arizona
- Arkansas
- California

75 Records Found for Home Verifiers  
Showing Records 1 through 10

### Scott Akey

**Company Name** Rain Bird Corporation

**Email:** N/A

**Phone:** N/A

[Visit website to learn more](#)

**Home Certification Organization – Program:** Irrigation Association

### Andrew Barna

**Company Name** BrightView Landscape Services

**Email:** N/A

**Phone:** N/A

[Visit website to learn more](#)

**Home Certification Organization – Program:** Irrigation Association

### J. Louis Bergantino

**Company Name** Rain Bird Corporation

**Email:** N/A

**Phone:** N/A

[Visit website to learn more](#)



# Next Steps



# Important Dates

- **June 30, 2021:** Homes permitted by this date can use either the *WaterSense New Home Specification, Version 1.2* or the *WaterSense Specification for Homes, Version 2.0*
- **December 31, 2021:** Certification must be complete for all homes using Version 1.2 of the specification





# Next Steps

- Increase number of WaterSense Home Verifiers
- Add HCOs?
- Transition existing building partners from Version 1 to Version 2
- Update training and educational materials for Version 2
- Support WaterSense utility and promotional partners
- Spread the word to the building community!



# Questions?



WaterSense Homes Program  
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