



# WaterSense<sup>®</sup> Labeled Homes

## Version 2.0

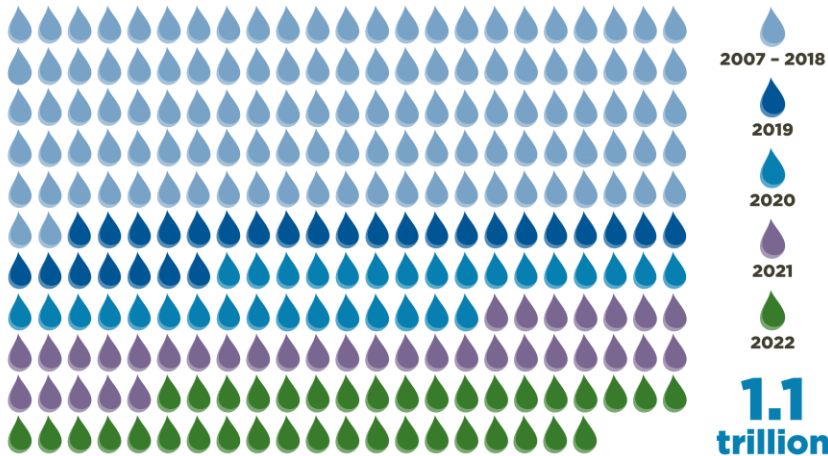


Jonah Schein | WaterSense, U.S. EPA  
NWPA | September 2023

# WaterSense Through 2022

**WaterSense** partners helped save

**7.5 trillion** gallons of water



**1.1**  
trillion  
gallons  
saved in  
2022

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

WaterSense partners helped consumers save

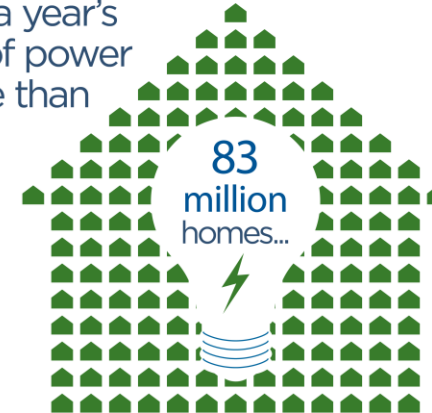


**\$171 billion**  
in water and  
energy bills

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

**880 billion**

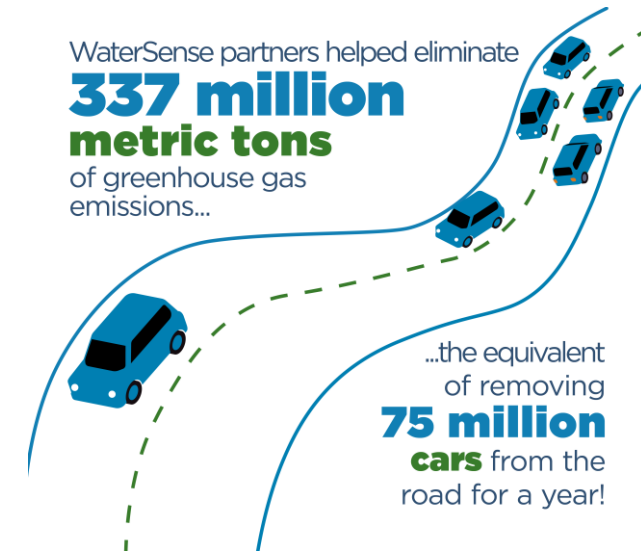
**kilowatt hours**, enough to supply a year's worth of power to more than



WaterSense partners helped eliminate

**337 million**  
**metric tons**

of greenhouse gas emissions...



...the equivalent of removing  
**75 million**  
**cars** from the road for a year!

# WaterSense Labeled Products

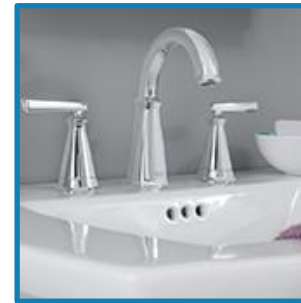
More than **43,000** product models have earned the label. Water factors are included in many **ENERGY STAR** certified products.



Flushing  
Urinals



Showerheads



Lavatory  
Faucets



Flushometer  
Valve Toilets



Tank-Type  
Toilets



Irrigation  
Controllers



Spray  
Sprinkler  
Bodies

# WaterSense Labeled Homes

- First national certification for water efficiency
- Provides a consistent and comprehensive approach to efficient homes
- Version 2.0 became effective in 2022:
  - Reduces water use in homes by **at least** 30% compared to code-built homes
  - Are third-party certified using existing certification infrastructure, overseen by EPA
  - Offers more flexibility relative to V1 while maintaining or increasing efficiency
  - Responds to market and climate changes

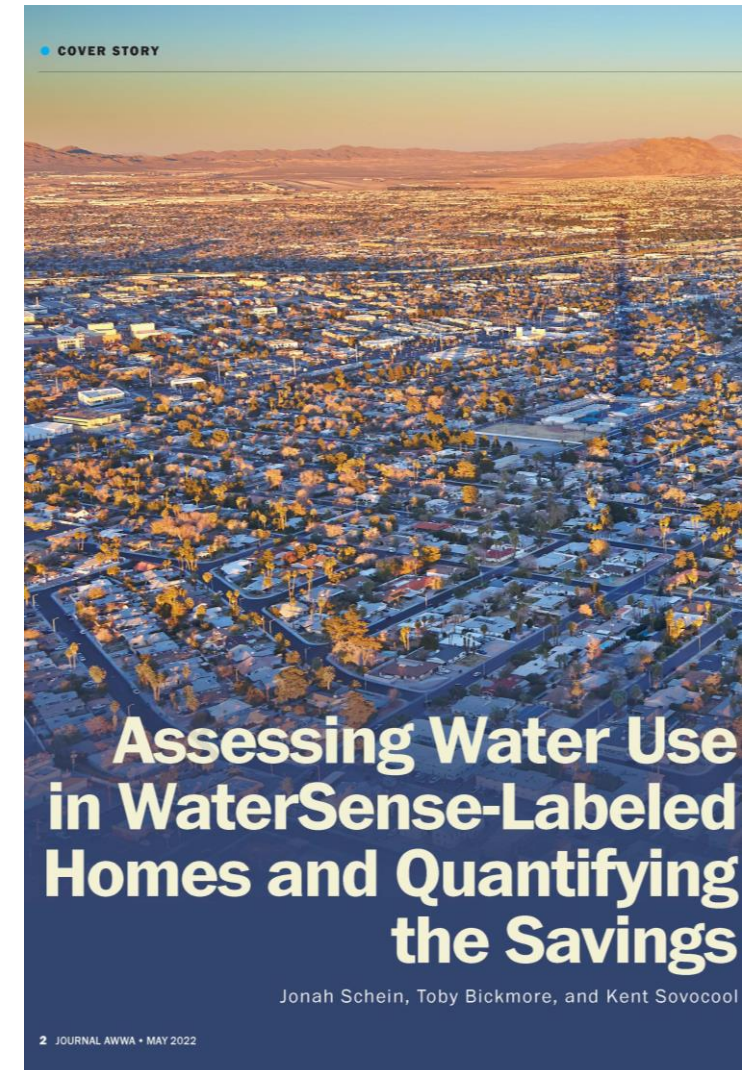


<https://www.epa.gov/watersense/homes>

Photo: First community of all WaterSense labeled new homes in Issaquah, WA

# Las Vegas Pilot Study

- V2 was piloted in the Las Vegas region in the summer of 2020 following the sunset of Water Smart Homes
  - 568 homes were certified through the pilot project
- Metered water usage was collected from the retail utilities and paired with information gathered during the inspection/certification process
- Median use was 44 kgal/year (based on 160 WaterSense labeled homes) compared to 97 kgal/year in typical new construction in the area
  - At this rate roughly 7.5 homes/year can be supplied with an acre-foot of water compared to 3-4 homes/year typically seen in the West
- [Full report available online](#)



# Who has experienced this?

We are going to grow this city! It's gonna be great!!!

Well, we only have 50,000 acre-feet/year we can rely on...

That's great! Because we are going to grow this city by hundreds of thousands!!

But we only have 50,000 acre-feet!!!

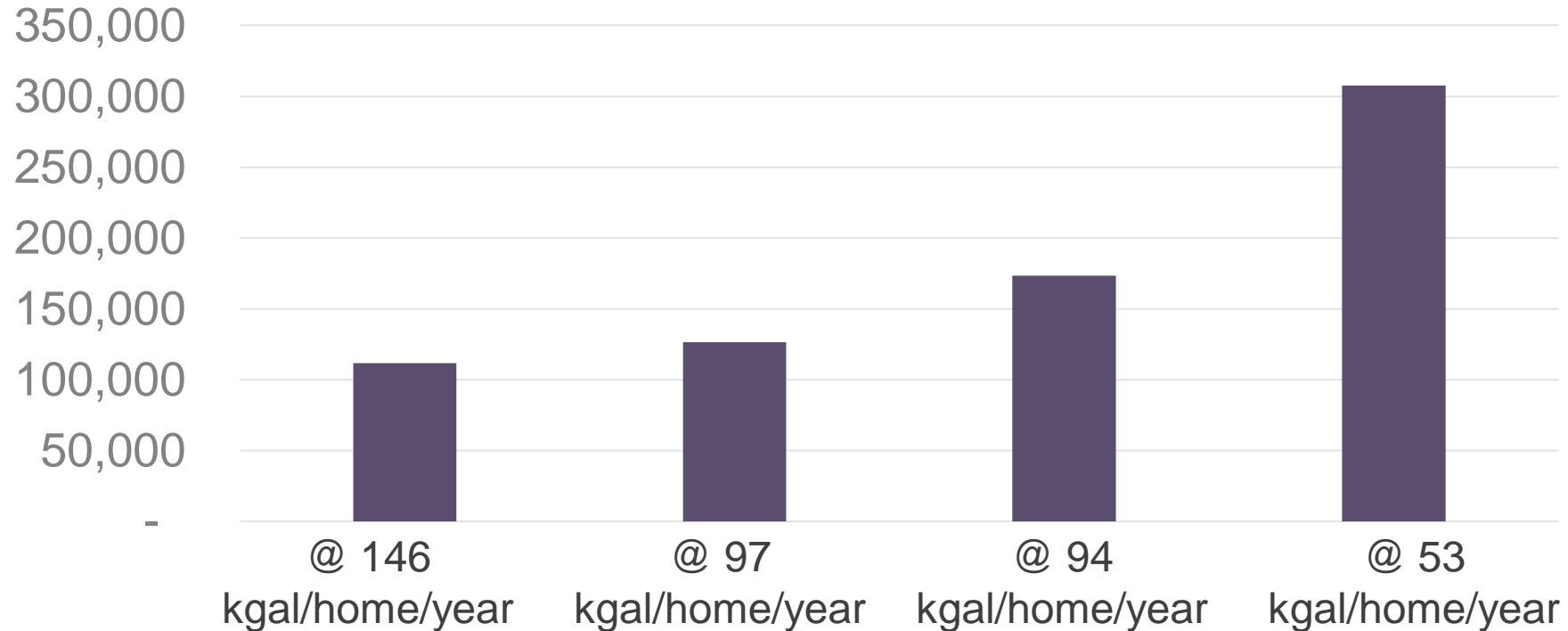


Mayor



Planner

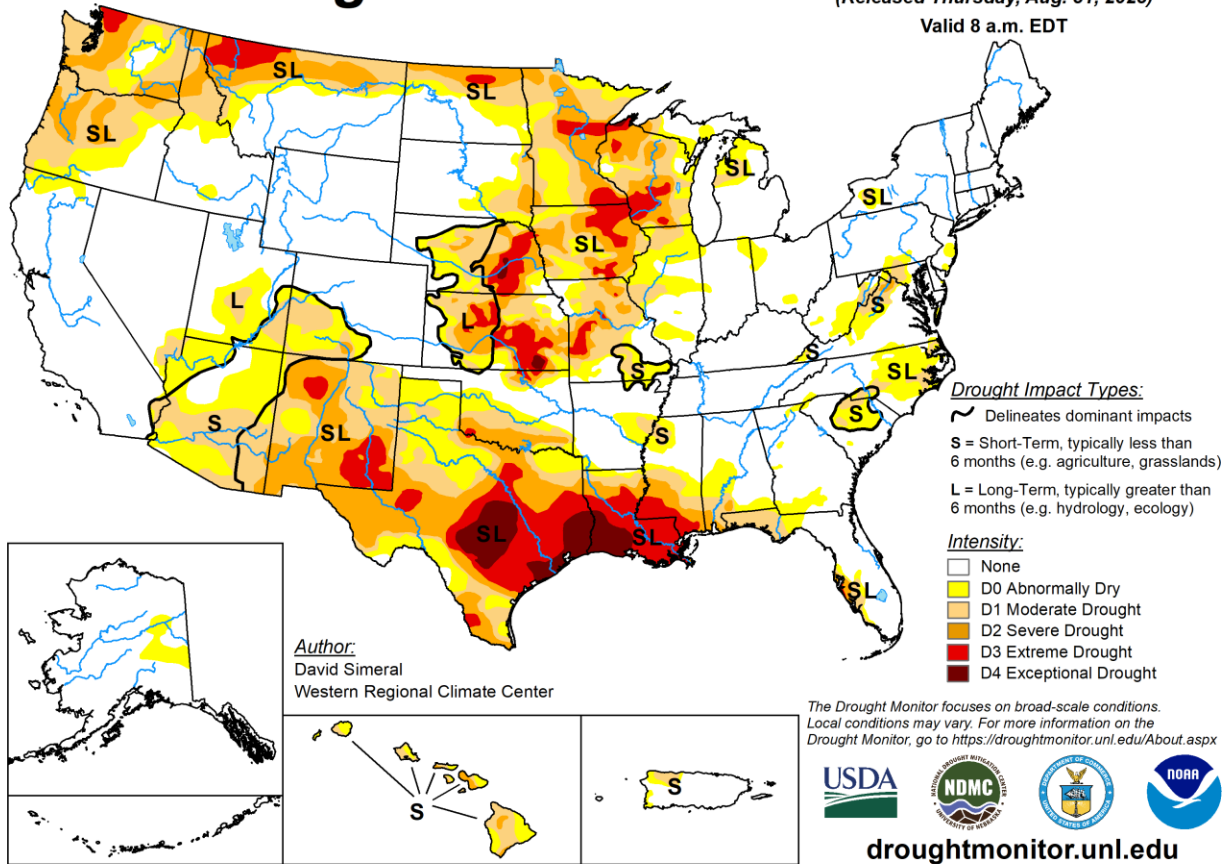
Households supported with 50k acre-feet of water



# Crisis 1: Drought

## U.S. Drought Monitor

August 29, 2023  
(Released Thursday, Aug. 31, 2023)  
Valid 8 a.m. EDT



# Crisis 2: Infrastructure



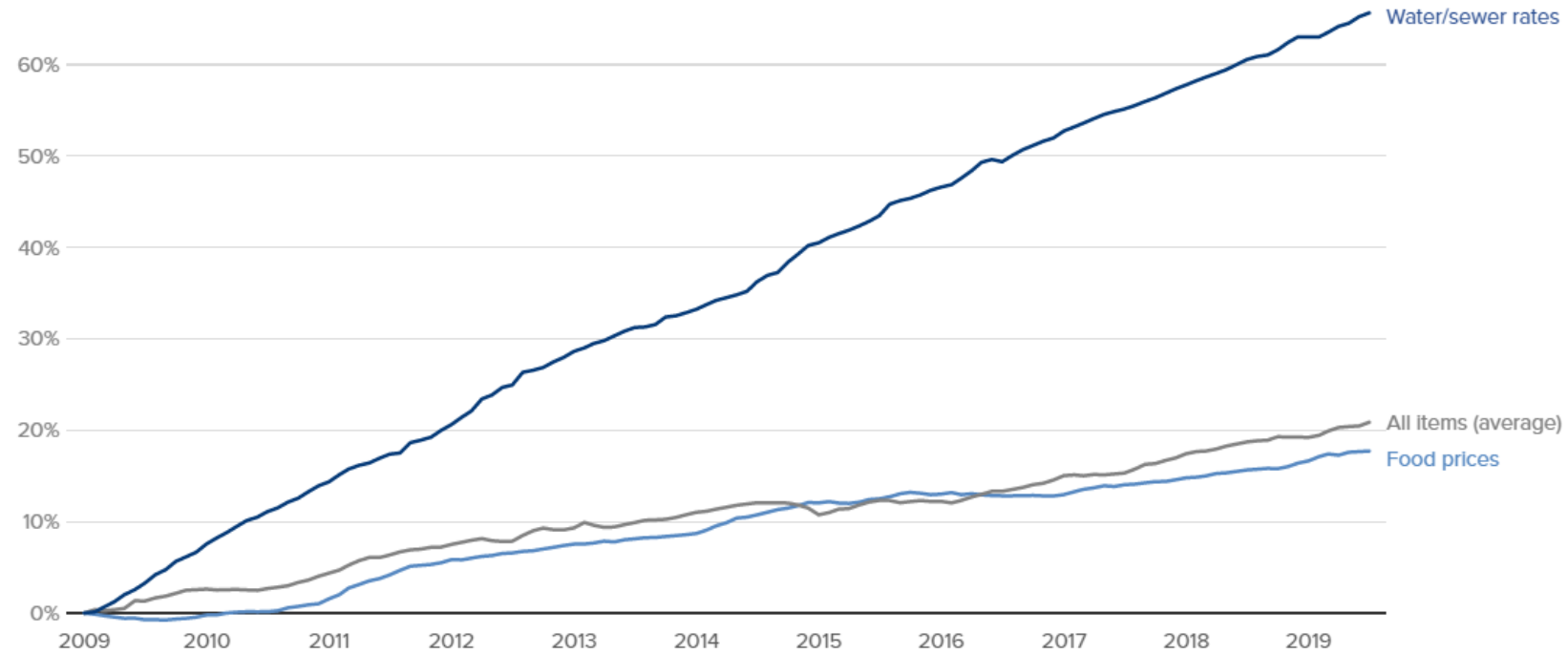
## ➤ Compliance & infrastructure costs

- 12,000 miles of pipe were replaced in 2020 alone

## ➤ Operations

- Utilities spent \$50.2 billion above capital in 2017

What Americans pay for water and sewer service has increased much faster than inflation or the price of food.



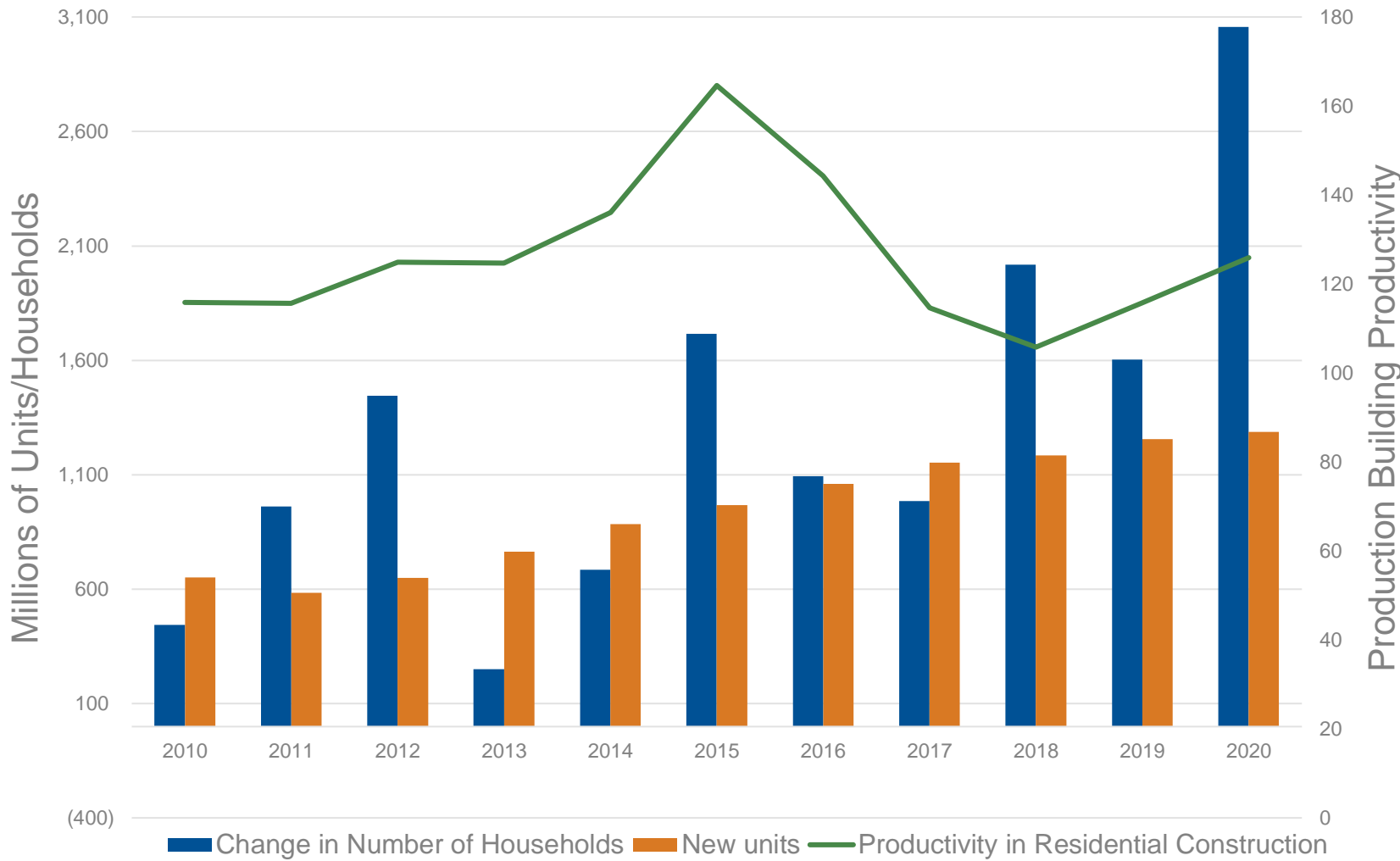
Source: Bureau of Labor Statistics—Consumer Price Index

This is before the added burden from drought, stress, and climate change!



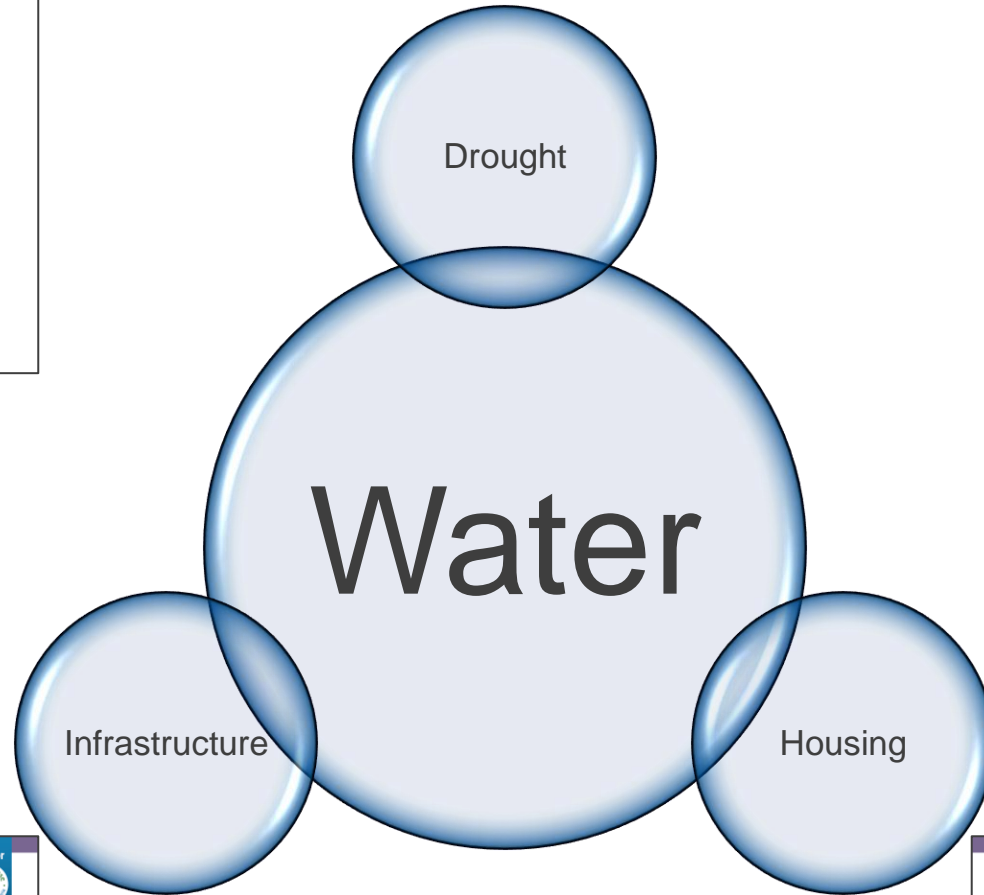
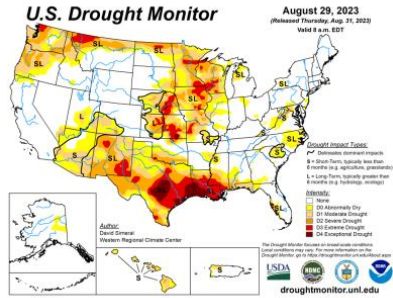
# Crisis 3: Housing

Between 2010 and 2020 the country added almost 4 millions more households than housing units



Productivity in residential construction has been relatively flat for decades

## Crisis 1: Drought

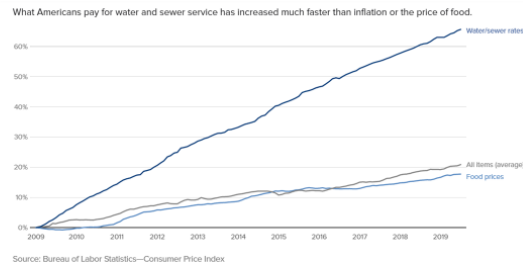


Water sits at the center of these crises!

## Crisis 2: Infrastructure



- Compliance & infrastructure costs
  - 12,000 miles of pipe were replaced in 2020 alone
- Operations
  - Utilities spent \$50.2 billion above capital in 2017

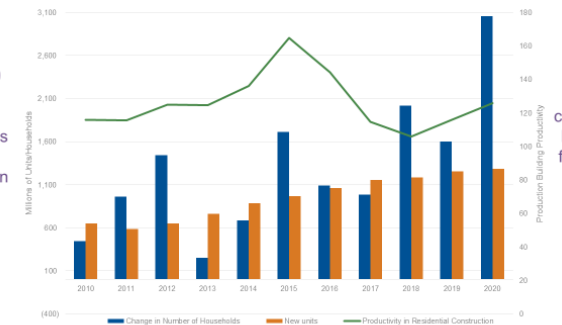


This is before the added burden from drought, stress, and climate change!

## Crisis 3: Housing



Between 2010 and 2020 the country added almost 4 million more households than housing units



Productivity in residential construction has been relatively flat for decades

# Benefits of WaterSense labeled homes for Communities



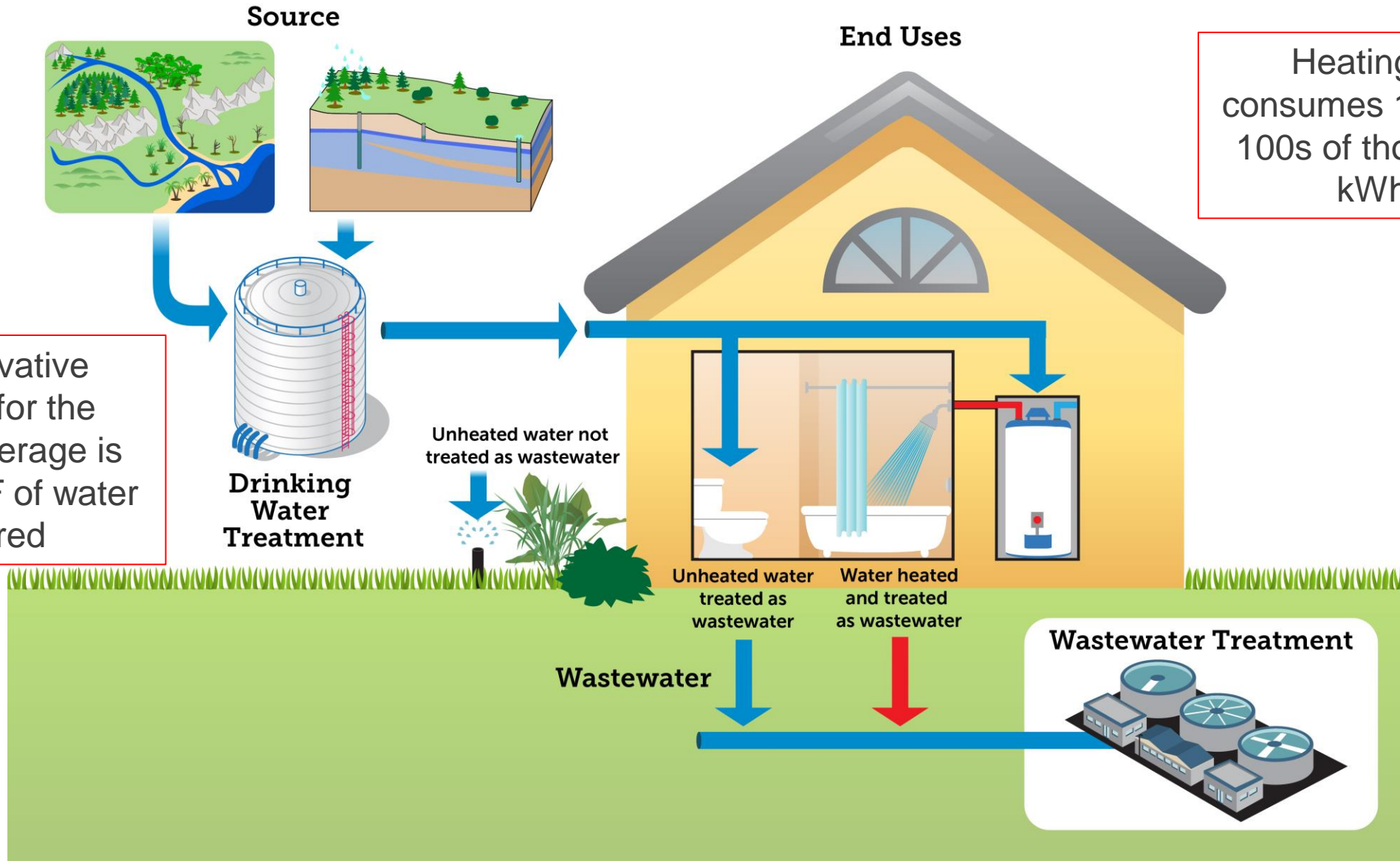
- Lots of savings, built in from the start
  - New construction/substantial renovation allows us to target maximum savings for smallest incremental cost
  - Savings are achieved throughout the life of the home
- Whole-house building science approach is more effective than product/specification/retrofits alone
  - A home's systems (plumbing, irrigation, etc.) don't lend themselves to product labeling
  - Provides a template for continued savings beyond product replacement
- Whole-house building science approach is more effective than product/specification/retrofits alone
  - Adaptive to climate and market considerations
  - Confidence and durability of savings is increased by onsite verification and quality assurance



# Benefits of WaterSense labeled homes for builders/developers

- Added value to the homebuyer
  - Cost savings
  - Comfort
  - Quality
- Savings and performance with flexibility
- 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
- Disclosure and ESG reporting requirements
  - Being responsible stewards of water is an important part of the building industry's social license to operate AND often a prerequisite for investment
- Water has to be part of the decarbonization discussion

# What Influences the Energy Profile of Water?



A conservative estimate for the national average is 674 kWh/AF of water delivered

Heating water consumes 10s or even 100s of thousands of kWh/AF

A conservative estimate for the national average is 800 kWh/AF of wastewater treated

# Version 2.0 Requirements

## Technical requirements for homes

- Meet all items on the mandatory checklist
- Meet an efficiency threshold of 30% below typical new construction (based on national norms)

Specification

## Requirements for Home Certification Organizations (HCOs)

- Organizational requirements for oversight, quality assurance, training, reporting, and managing conflicts of interest
- Technical evaluation of the proposed certification method
  - Will it effectively differentiate homes that save 30%

Certification System

Technical Evaluation Process

# Technical Requirements for V2

## MANDATORY CHECKLIST FOR WATERSENSE LABELED HOMES

Item	Requirements	Confirmed	
Leaks	Pressure-loss test on all water supplies detected no leaks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Free of visible leaks from hot water delivery system	<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 determine 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., clothes washers, dishwashers, hose bibs, 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

- Meet all items on the mandatory checklist
- Meet an efficiency target of 30% relative to standard new construction

# How do I Measure 30%?

- EPA allows HCOs to develop their own method of measuring water use
  - EPA retains the role of reviewing/approving each HCO's method
  - This evaluation protocol is available on our website
- EPA has approved **Home Certification Organizations (HCOs)**
  - HCOs can use a different tool or approach to measure the 30% efficiency requirement.
  - EPA evaluates their method, as part of the application process, to reiterate that the tools are measuring water efficiency accurately.
  - Methods are then referred to as WACMs – WaterSense Approved Certification Methods
- Goal is to protect the integrity of the WaterSense Program and label ensuring certified homes meet the stated efficiency threshold regardless of the WACM used.



# Flexibility with Consistency

- Minimal Mandatory Items prescriptive items
- Ability to use a performance-based, whole-house approach
  - For example, a WERS score of 66 or lower is needed for WaterSense certification
- Easy training for verifiers
  - Available through individual HCOs
- Ability to work with additional HCOs

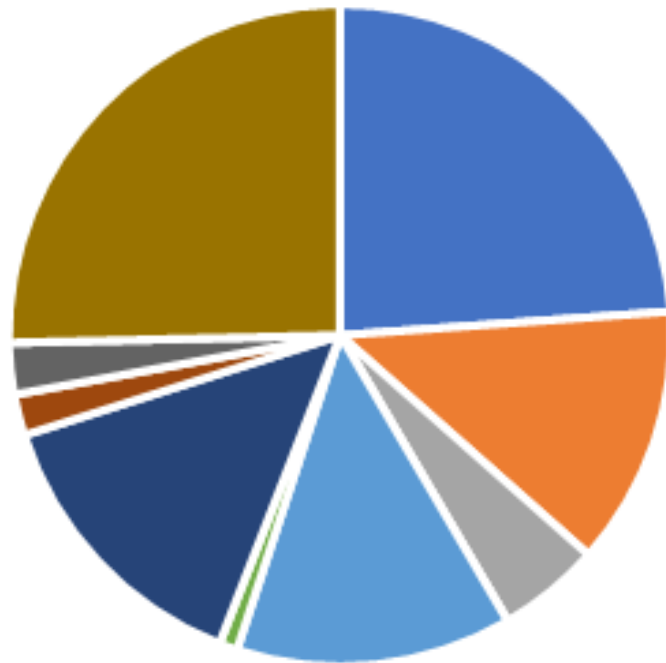


HCO	SCOPE			METHOD FOR LABELING HOMES
	REGIONALITY	BUILDING TYPES	CONSTRUCTION TYPE	
		Single-Family 	New Construction 	Achieve a score of 70 or less under CHEERS WaterSense
		Single-Family 	New & Existing Construction 	Achieve a score of 66 or less under the Water Efficiency Rating Score (WERS) with WaterSense Baselines
		Single-Family & Multifamily  	New & Existing Construction 	Complete a set of selected practices from the National Green Building Standard (NGBS)
			New Construction 	Achieve a score of 64 or less under the Water Rating Index
		Single-Family 	New & Existing Construction 	Achieve a score of 70 or less under HERS <sub>H2O</sub>

# EPA Approved HCOs

# How Do We Find the Savings?

@ a net ET of 25



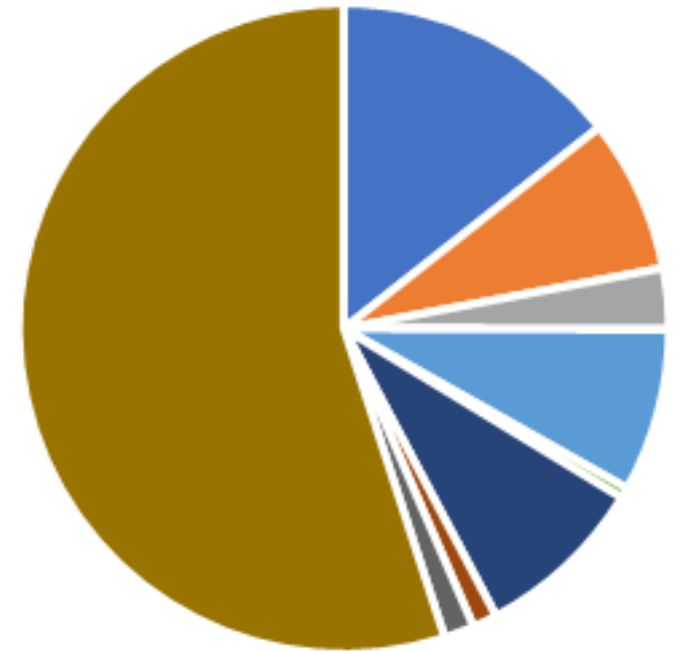
■ Showers  
■ Dishwasher

2,500 ft<sup>2</sup>  
5 bedrooms  
4,400 ft<sup>2</sup> lot  
1,900 ft<sup>2</sup> landscape



■ Kitchen Faucets  
■ Toilets  
■ Lav Faucets  
■ Other/leaks

@ a net ET of 90



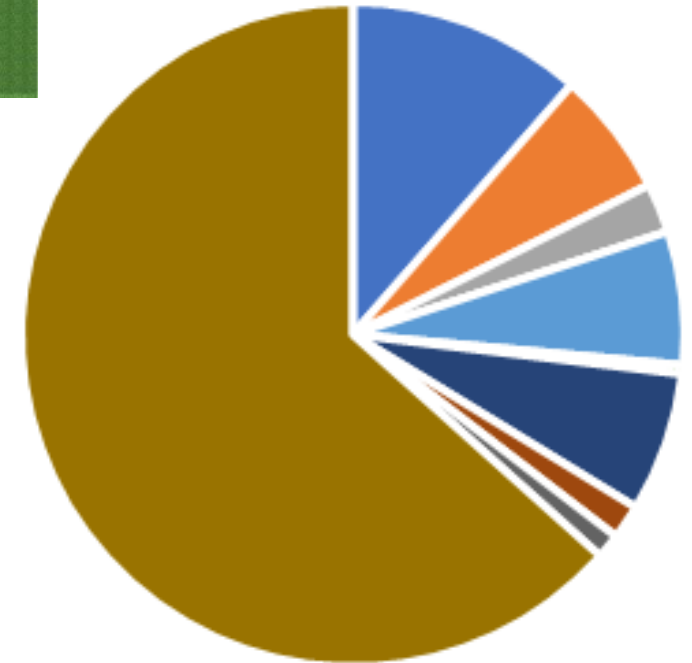
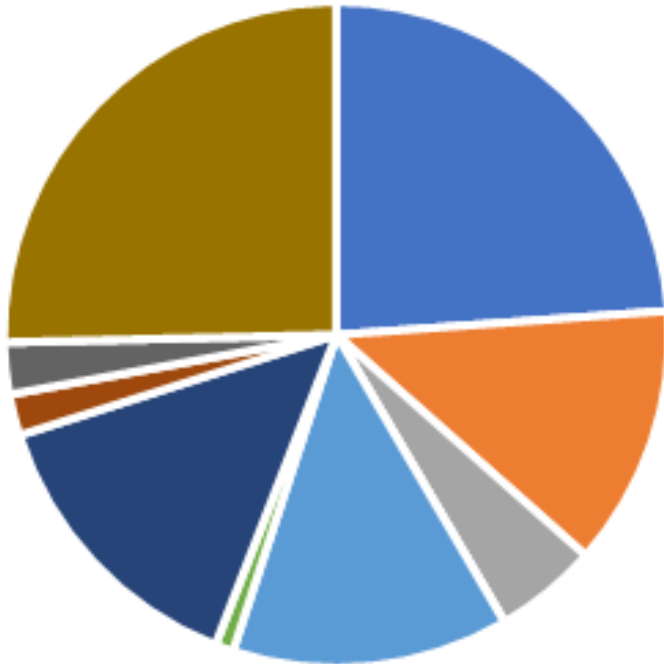
■ Waste  
■ Baths  
■ Clotheswasher  
■ Outdoor

# How Do We Find the Savings?

2,500 ft<sup>2</sup>  
 5 bedrooms  
 4,400 ft<sup>2</sup> lot  
 1,900 ft<sup>2</sup> landscape  
 @ a net ET of 25

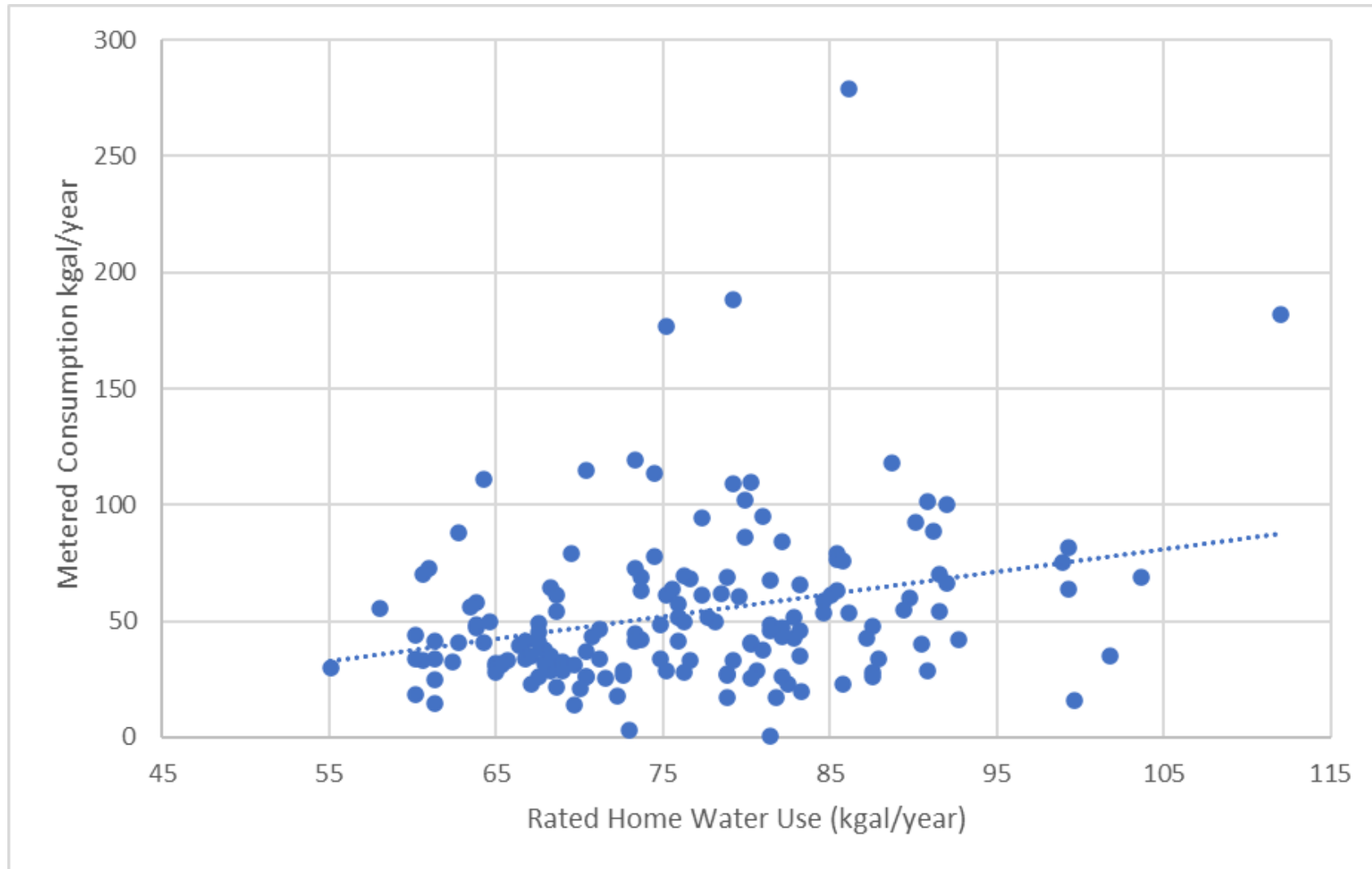


1,000 ft<sup>2</sup>  
 2 bedrooms  
 10,000 ft<sup>2</sup> lot  
 5,800 ft<sup>2</sup> landscape  
 @ a net ET of 25



- Showers
- Kitchen Faucets
- Lav Faucets
- Waste
- Clotheswasher
- Dishwasher
- Toilets
- Other/leaks
- Baths
- Outdoor

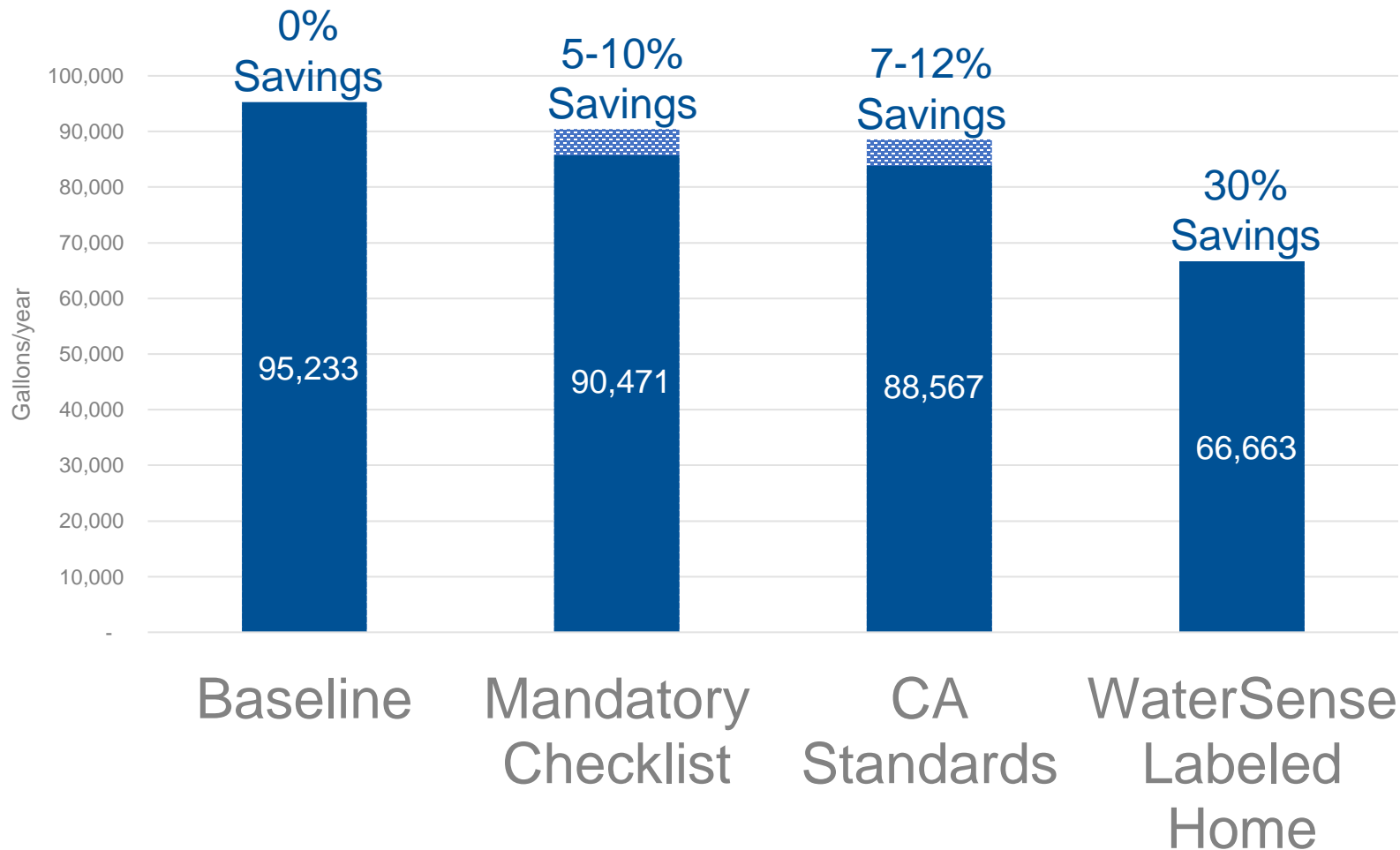
# Predictions vs. Reality



Residential water use is **both** highly variable and highly predictable!

# How Much Can We Save in Seattle?

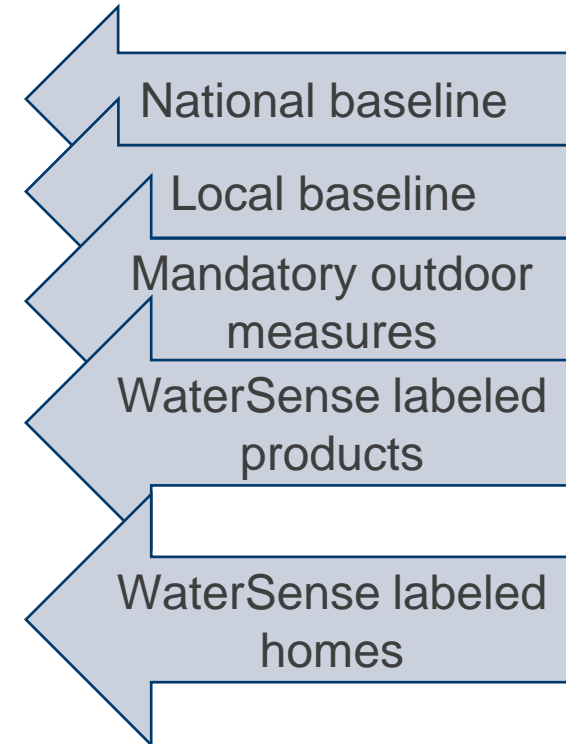
- Assuming a statistically average home
- Single-family home in Seattle, WA
- 2.61 people per household
- ~10,000 ft<sup>2</sup> lot with ~5,800 ft<sup>2</sup> of landscaping



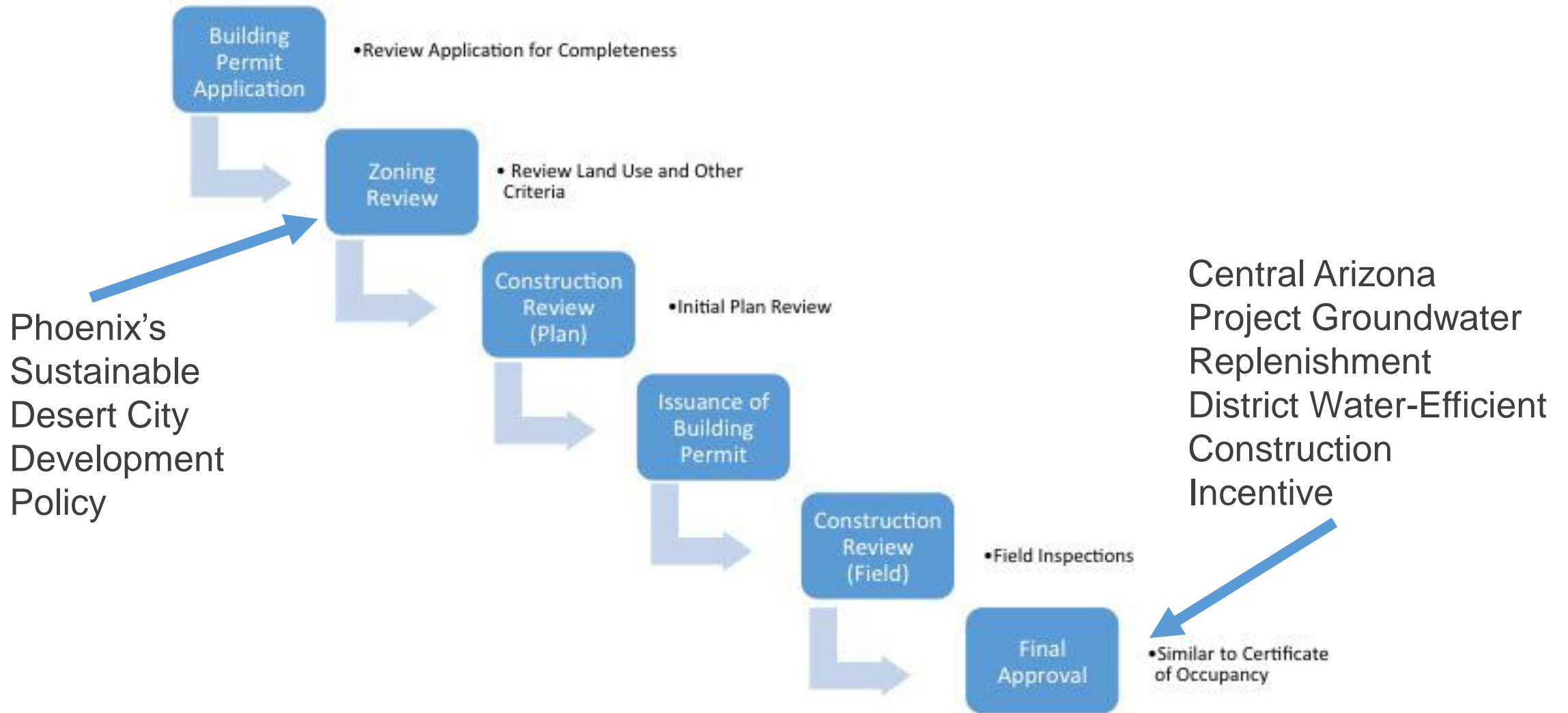


# We Can Save More With the Whole-House Approach!

Source	Scope	Study population & period	Average Value (kgal/household/year)
<b>Residential End Uses of Water Study</b>	National	Stock housing monitored 2013-2014	146
<b>SNWA</b>	Las Vegas Area	New homes built 2000-2003	129
<b>SNWA</b>	Las Vegas Area	New homes built 2008-2009	97
<b>SNWA</b>	Las Vegas Area	New Water Smart Homes built 2008-2009	94
<b>WaterSense Labeled Homes Study</b>	Las Vegas Area	New WaterSense labeled homes built 2020-2021	53



# How are communities using the WaterSense labeled homes program?







# Get in touch...

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Web | <https://www.epa.gov/watersense/homes>

Email | [watersense@epa.gov](mailto:watersense@epa.gov)

Phone | (866) WTR-SENS (987-7367)



# HCO Factsheets



## WaterSense Labeled Homes Program

### Home Certification Organization: RESNET

The U.S. Environmental Protection Agency's (EPA) WaterSense® program works with Home Certification Organizations (HCOs) to certify and issue the WaterSense label to homes that meet EPA's criteria for both water efficiency and performance.

#### What's in a WaterSense Labeled Home?

All WaterSense labeled homes are independently certified to meet EPA's Mandatory Checklist and be at least 30 percent more water-efficient than a typical new home.

#### MANDATORY CHECKLIST TO ENSURE QUALITY PERFORMANCE

##### LEAKS

- Pressure-loss test on all water supplies detects no leaks
- Free of visible leaks from all fixtures and appliances at point of use or point of connection to water distribution system
  - Toilets
  - Bathroom faucets
  - Showerheads
  - Bathroom tub faucets, i.e., tub spouts
  - Kitchen and other sink faucets
  - Other fixtures or appliances (e.g., water heaters, clothes washers, dishwashers)

##### WATERSENSE LABELED PLUMBING FIXTURES

- Toilets
- Bathroom sink faucets
- Showerheads

#### EFFICIENCY REQUIREMENT

##### VERIFIED EFFICIENCY

- At least **30 percent** more water-efficient than a typical new home (based on national standards and common design and landscape practices).

#### What is a Home Certification Organization's Role in Labeling Homes for WaterSense?

Within the WaterSense Labeled Homes Program, HCOs are responsible for quality assurance, verifier training and oversight, home verification protocols, and reporting. HCOs also maintain their own certification method (reviewed and approved by EPA) to evaluate a home's water efficiency and determine whether it meets EPA's efficiency requirement. This **WaterSense Approved Certification Method (WACM)** can include features such as water-efficient fixtures, appliances, and systems (e.g., irrigation and hot water delivery) that builders can include in homes to meet the efficiency requirement. Keep reading to learn more.



#### How Builders Can Get Involved:

Are you a builder ready to get started? Partner with WaterSense and visit [www.epa.gov/watersense/watersense-labeled-homes](http://www.epa.gov/watersense/watersense-labeled-homes) to learn more.

#### HCO Profile: RESNET

RESNET is a national non-profit organization founded in 1995. RESNET develops standards for the certification and oversight of home energy and water ratings and the certification of individuals who conduct those ratings. With its network of more than 2,500 active and Retired and Rating Field Inspectors, RESNET has a footprint software used to complete ratings and a network of quality oversight of energy and water ratings.

#### Method for Labeling Homes: HERS<sub>H2O</sub>

RESNET uses HERS<sub>H2O</sub> for WaterSense certification. HERS<sub>H2O</sub> is based on the nationally accredited standard ANSI/RESNET/ACC 850. To earn the WaterSense label through HERS<sub>H2O</sub>, a home must achieve a score of 70 or less and adhere to the items on WaterSense's Mandatory Checklist. Since HERS<sub>H2O</sub> is a performance-based program, builders can use any combination of indoor and outdoor water efficiency measures to achieve the target score.



#### Alignment With Other Certification Programs

HERS<sub>H2O</sub> was designed to be easily added to a HERS rating. HERS Raters and Rating Field Inspectors who have been trained and authorized as WaterSense Home Verifiers only need to complete a few additional testing and inspection requirements during their final HERS inspection in order to issue a HERS<sub>H2O</sub> rating and verify that a home has earned the WaterSense label. This process makes it easy for builders to use one Rater to obtain HERS and HERS<sub>H2O</sub> ratings, the WaterSense label, and ENERGY STAR® certification.

For more information about RESNET, visit

#### HCO Profile: CHEERS

As California's largest Home Energy Rating System (HERS) Provider, CHEERS operates the central data verification platform where building industry professionals register projects for California energy code (Title 24), state, and federal efficiency program compliance. From single-employee shops to the nation's largest builders, more than 60,000 registered users utilize CHEERS to implement California energy and water efficiency programs.

#### Method for Labeling Homes: CHEERS WaterSense

CHEERS WaterSense is a system for rating whole-house water efficiency that includes both indoor and outdoor water uses. It is a performance-based program that requires a score of 70 or lower to earn the WaterSense label.



#### Alignment With Other Certification Programs

As a California Energy Commission approved HERS Provider and EPA ENERGY STAR® Partner, CHEERS' addition of WaterSense is a natural complement to CHEERS HERS Raters, who serve energy and water efficiency-minded builders.

For more information about CHEERS, visit

#### HCO Profile: Home Innovation Research Labs

Home Innovation Research Labs is an internationally recognized, third-party product testing and certification laboratory. Their work is solely focused on the residential construction industry, with a mission to improve the affordability, performance, and durability of housing. Home Innovation leverages its deep residential expertise and experience in its administration of green certification programs for residential construction. Home Innovation serves as certification body for the ICC-700 National Green Building Standard (NGBS), a Multifamily Review Organization (MRO) for EPA's ENERGY STAR® Multifamily New Construction Program, and an HCO for the WaterSense Labeled Homes Program.

#### Method for Labeling Homes: NGBS Green with WaterSense

There are two compliance pathways based on selected practices from the 2020 NGBS:

- (1) **Prescriptive** – Implement selected practices from NGBS Chapter 8 or 11, including installing efficient plumbing fixtures, appliances, hot water distribution, and irrigation systems.
- (2) **Performance** – Demonstrate overall water performance by earning a Water Rating Index (WRI) score of 64 or lower. A WRI score is a value between 0 and 100 that indicates a property's total indoor and outdoor water use compared to a baseline based on the home's size and basic configurations.



#### Alignment With Other Certification Programs

Home Innovation's WaterSense compliance methods are based on selected practices from the 2020 NGBS.

Achievement of WaterSense certification under either pathway nearly satisfies the water efficiency requirements for NGBS Green Certification. Dual certification to NGBS Green and WaterSense offers NGBS Green Partners added marketing benefit through a streamlined dual-certification process.

For more information about Home Innovation, visit [www.HomeInnovation.com/WaterSense](http://www.HomeInnovation.com/WaterSense)

#### HCO Profile: Green Builder® Coalition

The Green Builder Coalition is a non-profit membership organization for green building professionals that provides its members with information and advocacy resources. The Green Builder Coalition also owns the Water Efficiency Rating Score (WERS®) Program.

#### Method for Labeling Homes: Water Efficiency Rating Score (WERS) With WaterSense Baselines

WERS is a performance-based water efficiency program for both new and existing residential properties that preserves design freedom and product choice flexibility. Third-party analysis and data collection is utilized to generate a score and predict water usage. An eligible property must meet the WaterSense prescriptive requirements and achieve a WERS of 66 or less using WaterSense baselines.



#### Alignment With Other Certification Programs

WERS is an alternative compliance path in the following green building programs:

- Built Green Canada
- Austin Energy's Green Building Program
- Built Green Washington

WERS is also the basis for the Water Rating Index (WRI) found within the National Green Building Standard.

#### Scope

WERS is available in the United States and Canada but can be utilized anywhere in the world. WERS for WaterSense is currently only applicable to single-family properties in the United States.

Builders cannot use the capture and reuse function of WERS to earn the WaterSense label. While it does not contribute towards WaterSense certification at this time, WERS can accommodate any form of capture and reuse, including rainwater, graywater, blackwater, and stormwater.

#### Information for Verifiers

Training is available for those who wish to become WERS Verifiers. The verifier course includes both classroom and field training, along with a written and field exam.

Online and in-person training is offered. To register for the online course, please visit <https://certifiedratingsprogram.thinkific.com/courses/WERS-Verifier-Course>

For in-person training options, please contact Lauren at [lba@greenbuildercoalition.org](mailto:lba@greenbuildercoalition.org). Minimum class size is 5 and maximum class size is 12.

For more information about Green Builder Coalition, visit [www.wers.us](http://www.wers.us).



# Regional Factsheets



## WaterSense® Labeled Homes

Delivering on Efficiency in Salt Lake City, Utah

The U.S. Environmental Protection Agency (EPA) established WaterSense to protect the future of the nation's water supply and to promote water-efficient products, homes, and programs with a simple, easy-to-identify label. WaterSense labeled homes allow families to enjoy the comforts of home while using less water and energy and saving money on utility bills.

To earn the WaterSense label, homes must meet EPA's specification criteria: they must be at least 30 percent more water-efficient than typical new home construction, include WaterSense labeled plumbing products, and be free of water leaks. WaterSense labeled homes can also include features such as: hot water that gets to the tap faster; ENERGY STAR® certified appliances; efficient irrigation equipment; and water-smart landscapes that minimize or eliminate the need for irrigation.

### Why Water Efficiency Matters to Communities and Builders

Water supplies are an ongoing concern in Salt Lake City, Utah, and other communities along the Wasatch Front. More than 60 percent of Salt Lake City's water comes from the Wasatch Mountain snowpack, and the remaining needs are met by groundwater wells. Despite its proximity to mountain snowfall, this part of the state frequently experiences drought. The figure on the next page shows the drought status in Salt Lake County between 2000 and 2023, with yellow denoting abnormally dry conditions and darker colors indicating even greater drought intensity. Over the same period, the Salt Lake City metropolitan area's population increased by nearly 35 percent. Salt Lake and other regions affected by frequent droughts need to plan communities wisely so as not to overstress limited water supplies as population grows.

### Benefits of WaterSense Certification

#### For Communities/Water Agencies:

- Preserves the ability to add new housing and grow communities while limiting impacts on water and infrastructure resources.
- Achieves greater water efficiency using a whole-house, building-science approach and system solutions that may not be possible solely with efficient products.
- Encourages builders to design homes with water-efficient features in mind, maximizing water savings at minimal incremental cost.

#### For Builders:

- Mitigates the rising cost of water and utility connection fees.
- Leverages support from existing communities and investors.
- Offers advantages in the permitting and land entitlement processes.
- Supports corporate disclosures and reporting.



## Available for:

- Charlotte, North Carolina
- Denver, Colorado
- Las Vegas, Nevada
- Orlando, Florida
- Phoenix, Arizona
- Sacramento, California
- Salt Lake City, Utah
- San Antonio, Texas
- San Diego, California
- Santa Fe, New Mexico

# Introductory Guide

# Technical Reference Manual

