

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



# Implementing WaterSense® Labeled Homes

## Version 2.0



# Agenda

## **This is a double session (we will go until 2:10 PM)**

- 1:00-1:40 PM: Presentations (PechaKucha style)
  - Jonah Schein (moderator)- EPA WaterSense
  - Cindy Wasser- Home Innovations Research Labs
  - Pete DeMarco- IAPMO
  - Mike Collignon- Green Builder® Coalition
  - Ryan Meres- RESNET
- 1:40- 2:10 PM: Discussion and Q&A
- **Please feel free to come and go as you need to**
  - If you are headed to another session, we do not plan to stop at 1:30 though
  - Please do your best to be quiet and respectful

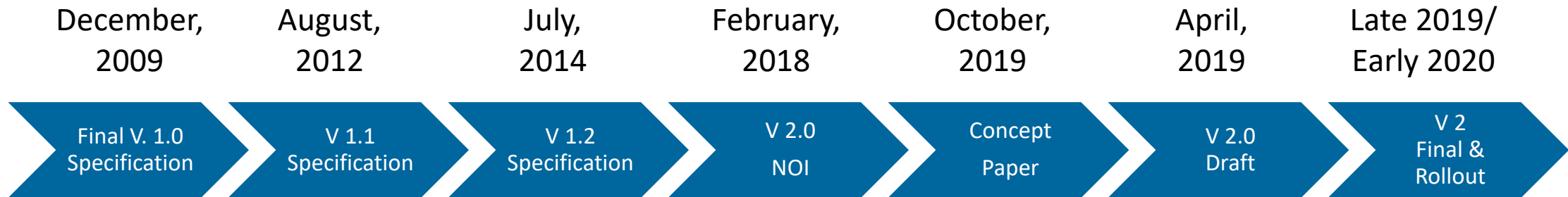


# WaterSense® Labeled Homes

## Version 2.0



# History of WaterSense Labeled Homes



- Version 1.1
  - Removed one of two options for the outdoor requirements
  - Modified product requirements to include WaterSense labeled showerheads and WBICs
- Version 1.2
  - Included minor changes to reflect removal of irrigation partners from the program
- Version 2.0
  - Wholesale change to methodology in the technical and certification requirements



# Challenges With V1: Lack of Flexibility



Ex: Hot Water Distribution  
Requirements



# Challenges With V1: Variable Value Proposition

STEP 1
Location and Area

STEP 2
Plants and Irrigation

STEP 3
The Results

Congratulations on choosing to design a locally appropriate water-efficient landscape! The WaterSense water budget tool will help you determine if your landscape meets EPA's criteria for efficient outdoor water use in your area.

In order to use the water budget tool, you will need to know some basic information about your landscape:

- The location and zip code
- The total area of applicable landscape
- Types of plants and the total coverage
- Methods of irrigation (if any)

Your landscape will receive a pass/fail based on local climate, plant selection, irrigation methods, and size of the landscape. Follow the instructions on screen to find out if your landscape meets the WaterSense criteria.

For what purpose is the tool being used?  
What are you landscaping?

WaterSense Labeled Home(s) ▼

How many sites?

☐ Development of Multiple Landscapes ☒ Single Site

Is there an irrigation system?

☒ Yes ☐ No

Enter Zip Code

75751

Enter Landscaped Area for a Single Home or Site<sup>i</sup>

5000 Sq. Ft.

Enter Multi-Home/Development Landscaped Area Range<sup>i</sup>

to Sq. Ft.

NEXT STEP >

Ex: Outdoor Requirements



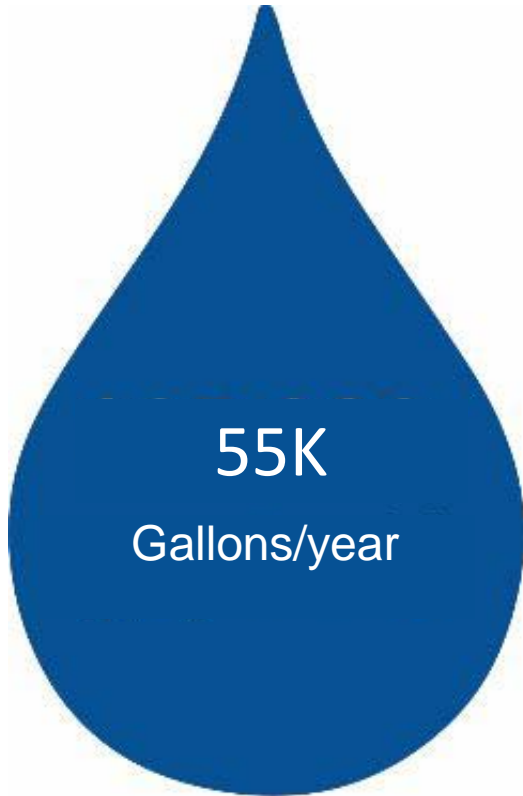
# Challenges With V1: Inflexible Certification Structure



Ex: Certification System focused on process not outcome



# Indoor Water Use: Pre & Post-EPACT



2000s Stock  
Plumbing Products



- 3 bedroom
- 1.5 bath
- 2,400 ft<sup>2</sup>



WaterSense  
Labeled Plumbing  
Products

## Requirements for WaterSense Labeled Homes V2

### Technical Requirements for WaterSense Labeled Homes

- Be 30% more efficient than typical new construction
- Meet all items of a mandatory checklist



### Requirements for Home Certification Organizations (HCOs)

- Organizational requirements
- Certification method development
- Certification method technical evaluation

# Evaluation Process for Proposed Certification Methodologies

Like a stress test to ensure the proposed methodology can differentiate homes that reduce water use by at least 30% from those that don't



WaterSense® Draft Technical Evaluation Process for  
Approving Home Certification Methods

Version 1.0

April 18, 2019



## Mandatory Checklist for WaterSense Labeled Homes



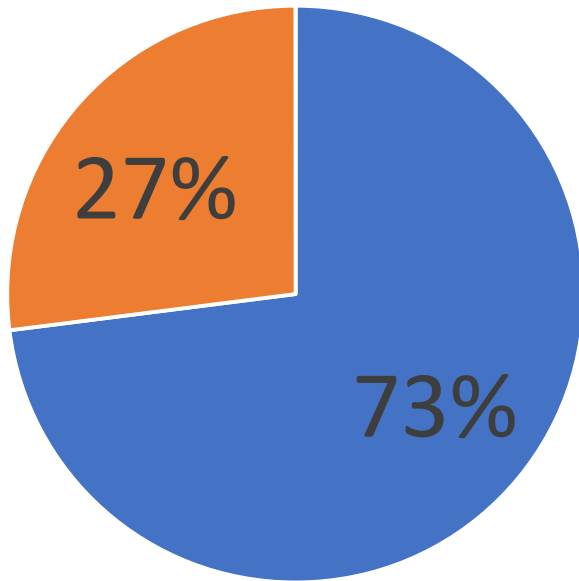
Item	Requirements	Confirmed	
Leaks	Pressure-loss test on all water supplies detects no leaks	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Free of visible leaks from toilet(s), as determined through visual assessment and by conducting a dye tablet test in each toilet to ensure the flapper 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 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., water heaters, 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

WHY?

30%



## Duluth, MN



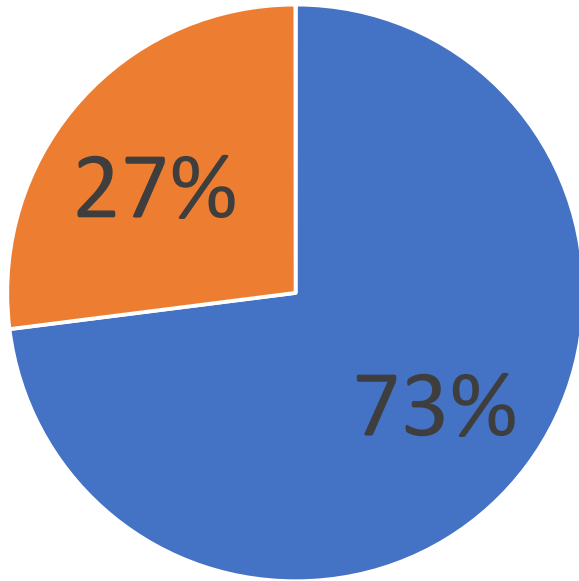
■ Indoor ■ Outdoor



- 4 bedroom
- 2,400 ft<sup>2</sup>
- 4,400 ft<sup>2</sup> acre lot



4,400 ft<sup>2</sup> lot  
Duluth, MN

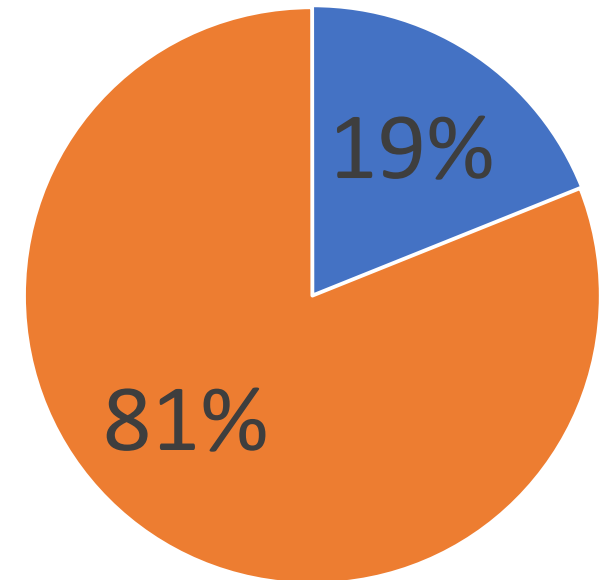


■ Indoor ■ Outdoor

- 4 bedroom
- 2,400 ft<sup>2</sup>



¼ acre ft<sup>2</sup> lot  
Phoenix, AZ



■ Indoor ■ Outdoor

# Baseline: Los Angeles, California



**0% water savings**  
*(estimated)*



- 3 bedroom
- 2,400 ft<sup>2</sup>
- 1.5 bath
- ¼ acre lot



# Mandatory Checklist: Los Angeles, California



**3.4% water savings**  
*(compared to Baseline Home)*



- 3 bedroom
- 2,400 ft<sup>2</sup>
- 1.5 bath
- ¼ acre lot



# California “Code”: Los Angeles, California



**13.4% water savings**  
*(compared to Baseline Home)*



- 3 bedroom
- 2,400 ft<sup>2</sup>
- 1.5 bath
- ¼ acre lot



# WaterSense Eligible: Los Angeles, California



**37.2% water savings**

*(compared to Baseline Home)*



- 3 bedroom
- 2,400 ft<sup>2</sup>
- 1.5 bath
- ¼ acre lot





Baseline Home



Mandatory  
Checklist  
3% reduction



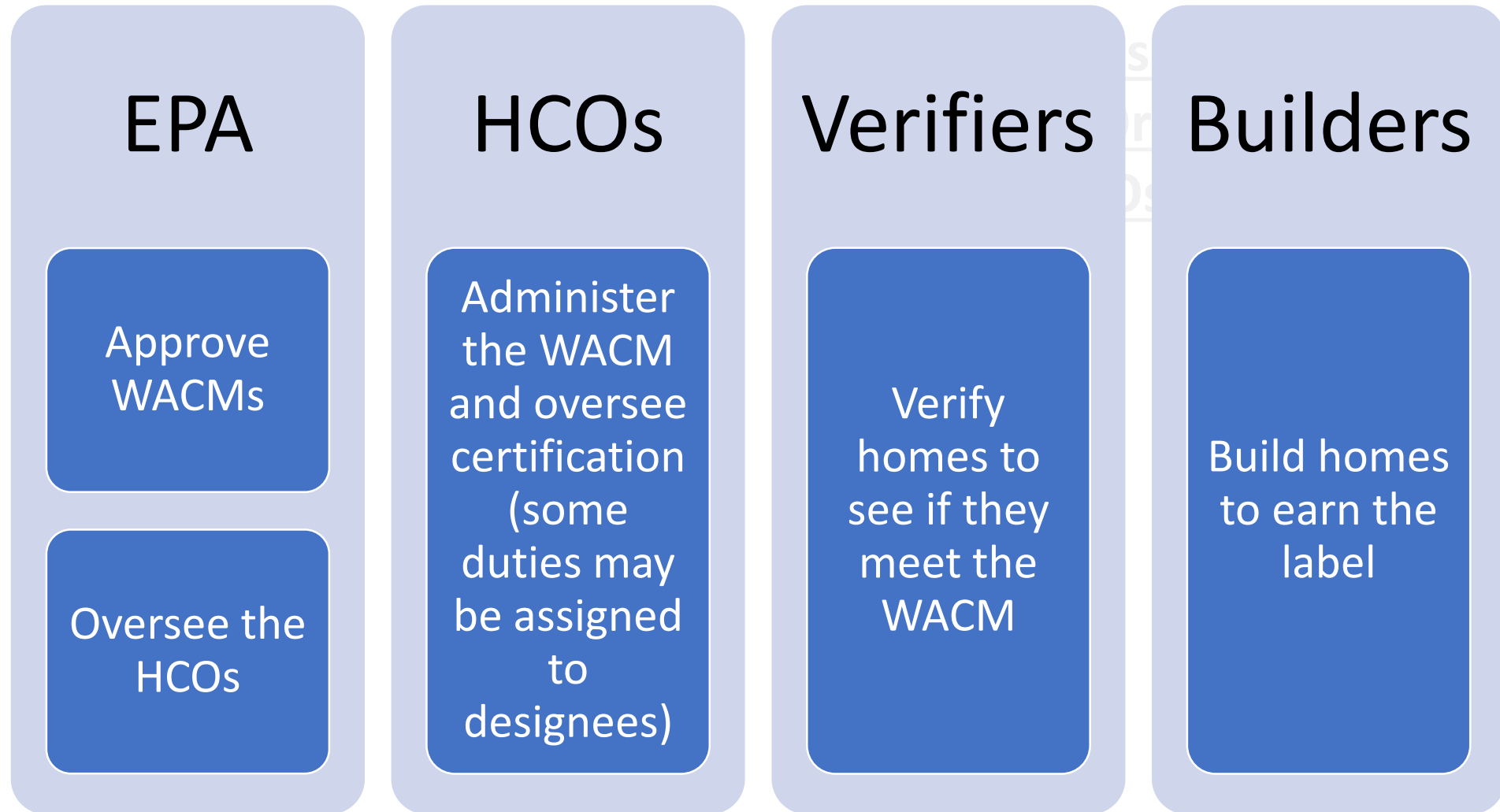
California Code  
13% reduction



WaterSense  
Certification  
37% reduction



# WaterSense Labeled Homes V2





# Transitioning From V1 to V2

Potential dates (for example)	Requirements
<i>January 1, 2020 to June 30, 2020</i>	Any home may use either the v1 or v2 requirements
<i>July 1, 2020 to December 31, 2020</i>	Homes permitted prior to the start of the transition period may use v1 or v2, all other homes must use v2
<i>After January 1, 2021</i>	All homes use v2



# While You Listen to the Speakers...

- Does the organization have a valid way to differentiate homes that do and do not meet the efficiency requirement?
- Do they have a clear structure to verify this in the field? Do they have an oversight structure to ensure this is done properly?
- How are they the same and how are they different?





**NGBS  
GREEN™**





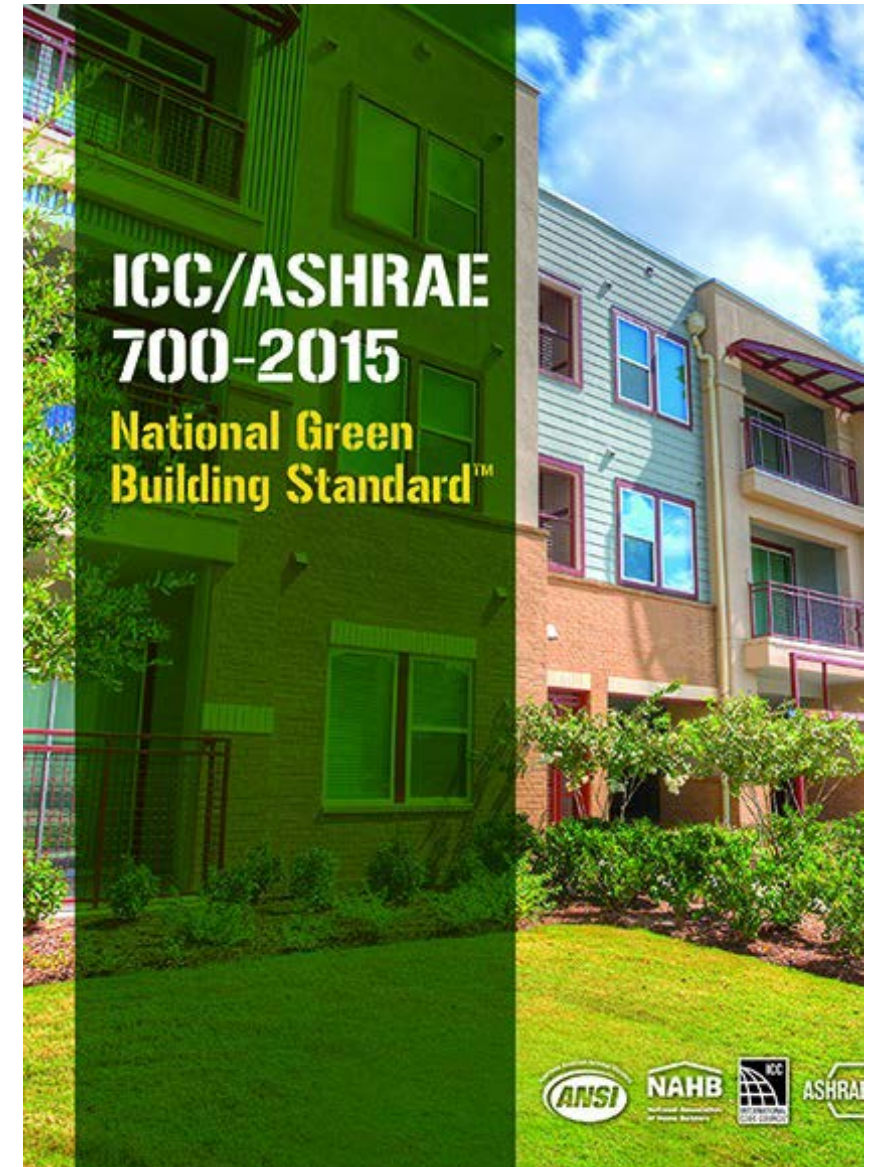
Mission:  
Improve quality, durability,  
affordability, & environmental  
performance of homes

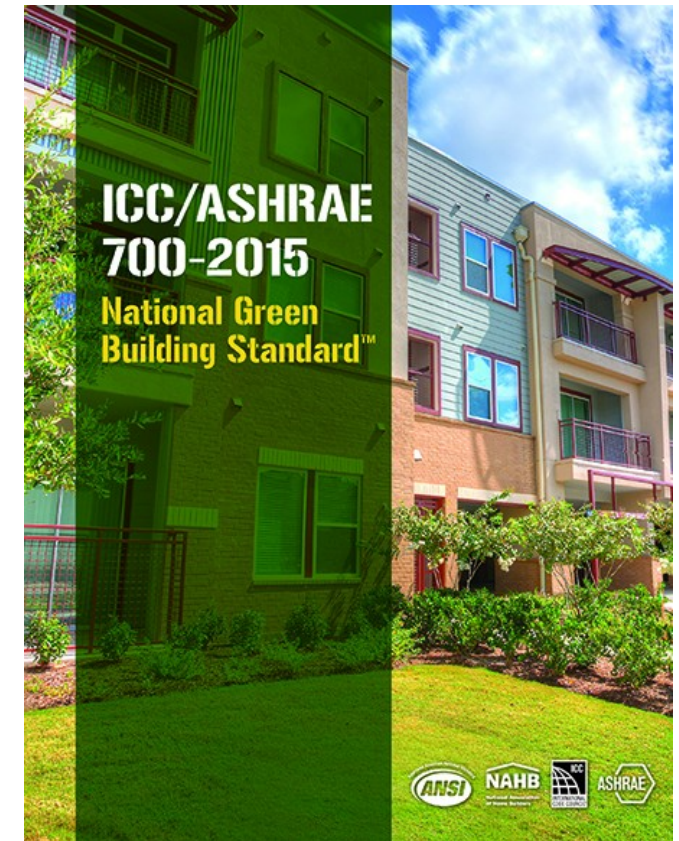
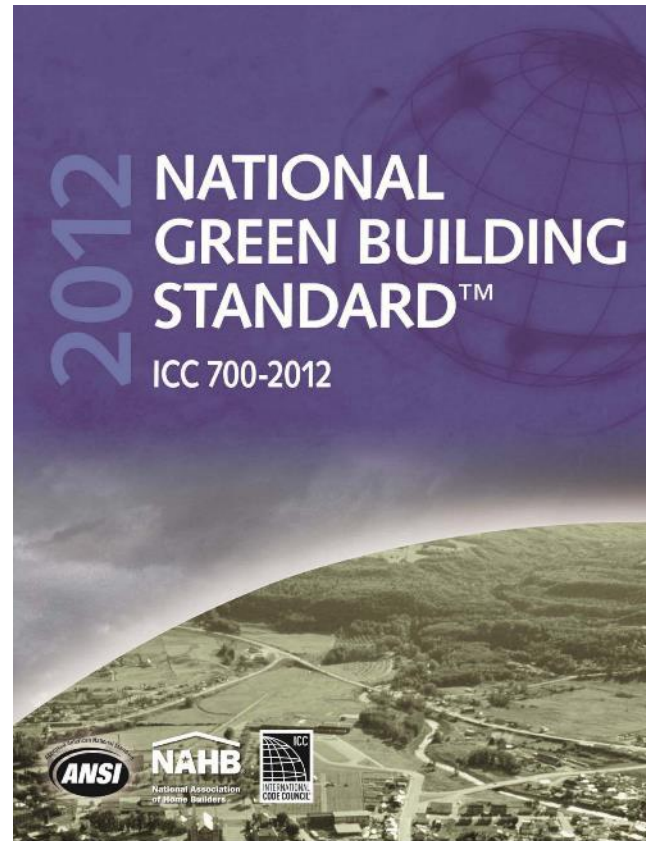
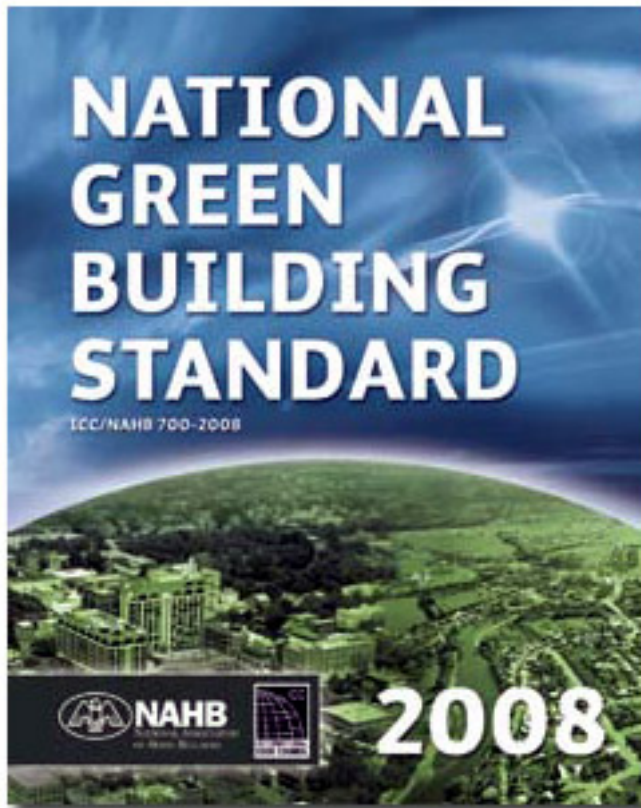
# Home Innovation Research Labs

- Founded in 1964
- Focused on residential construction
- Clients are architects, builders, developers, and product manufacturers
- Four categories of services:
  - Market Research
  - Product testing
  - Applied building science research
  - Standards developer
  - Accredited third-party lab and certification agency



- Voluntary, above-code green certification program
- For all residential occupancies
- American National Institute of Standards (ANSI) approved
- Part of ICC suite of I-Codes
- ASHRAE Standard
- Alternative compliance path for residential development within IgCC





# Three-year Development Cycle

# 2020 NGBS

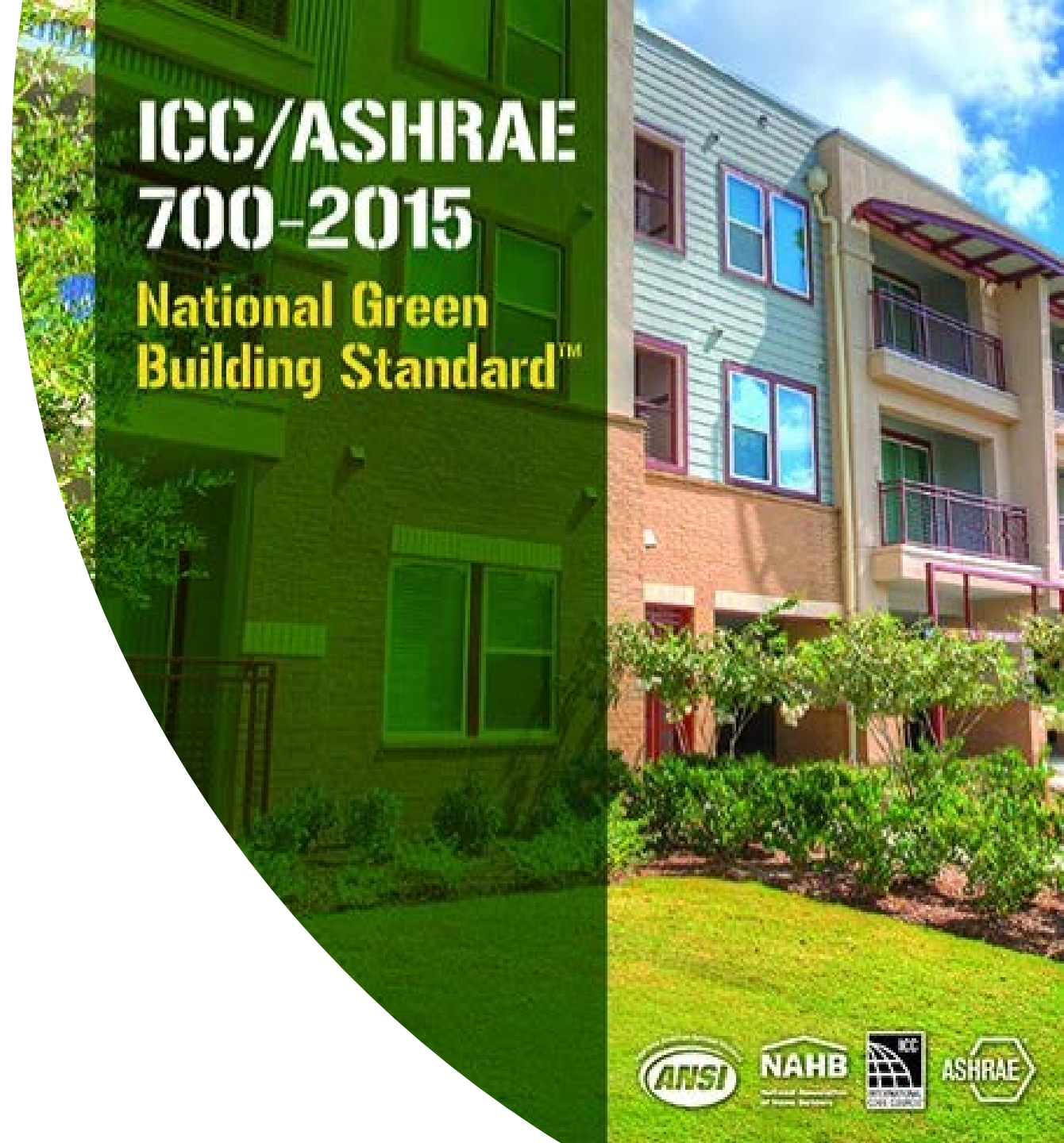
- Expected to finish late 2019
- Major Revisions
  - Allow non-residential uses <49% of building
  - Specifically allows assisted living, dorms
  - Sets 2018 IECC, IRC, IBS as baseline
  - Allows recognition of phased renovations
  - Water efficiency performance path
- [www.homeinnovation.com/ngbs](http://www.homeinnovation.com/ngbs)



# What makes NGBS different?

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- Comprehensive
- Practices for design, construction, verification, and operation
  - Written in code language
  - Few mandatory provisions
  - Expansive, flexible point-based system
  - Includes tropical climate zone provisions



# Categories of NGBS Green Practices

Lot Design, Development

Resource Efficiency

Energy Efficiency

Water Efficiency

Indoor Environmental Quality

Operation & Maintenance

# NGBS Compliance

- Mandatory Practices
  - No exemptions
  - No points
  - Ensures baseline code compliance
- Voluntary Practices
  - Awards points
  - Points based on difficulty level
  - Design, product/system selection, or construction-based practices



# 2015 NGBS Point Requirements: Comprehensive & Rigorous

Green Building Categories			Rating Level Points <sup>(1)</sup> <sup>(2)</sup>			
			BRONZE	SILVER	GOLD	EMERALD
1.	Chapter 5	Lot Design, Preparation, and Development	50	64	93	121
2.	Chapter 6	Resource Efficiency	43	59	89	119
3.	Chapter 7	Energy Efficiency	30	60	80	100
4.	Chapter 8	Water Efficiency	25	39	67	92
5.	Chapter 9	Indoor Environmental Quality	25	42	69	97
6.	Chapter 10	Operation, Maintenance, and Building Owner Education	8	10	11	12
7.		Additional Points from Any Category	50	75	100	100
Total Points:			231	349	509	641



# Certification program

- Home Innovation serves as Adopting Entity
- Accredited third-party Verifiers inspect residential buildings for NGBS compliance
- Certify homes and multifamily buildings as in compliance with NGBS
- Recognized by US Dept. of Housing and Urban Development (HUD), Fannie Mae, Freddie Mac
- Certification is conferred when construction complete, ongoing or post-occupancy certification is not required

# NGBS Green Process from Builder's Perspective



## Design Phase

Score the building  
Serves as Verifier checklist for inspections



## Hire Verifier

Verifier registers buildings  
Registration is free  
Verifier explains process, requirements



## Construction

Verifier notifies of inspections  
Inspections pre-drywall and final  
For MF, every unit visually inspected



## Earn NGBS Certification

Certification fee paid to Home Innovation  
On completion of final inspection  
Issued within one-business day

# Certification Program Philosophy

- Eliminate barriers
  - Costs (real/perceived; direct/indirect)
  - Difficulty/Inflexibility
  - Processing or documentation hurdles
- Be a partner
- Create incentives
- Provide construction QA/QC
- Pivot as necessary



# Nearly 200,000 homes certified to date.

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NGBS Project Type	Certified	In Process
Single-Family Homes (new & remodeled) *	15,986	5,483
Multifamily Buildings (new)	4,350	2,591
Unit count Multifamily Buildings (new) *	169,381	127,561
Multifamily Buildings (remodeled)	475	364
Unit count Multifamily Buildings (remodeled) *	5,477	6,289
Land Developments	27	8
Lots within NGBS Land Developments	1,683	24,501

# Home Innovation as HCO

- Opportunity to offer streamlined experience for builders to obtain green certification and WaterSense label together
- Leverage Home Innovation's residential construction expertise and certification experience
- *Eligibility:*
  - New Construction projects, both single-family and multifamily
  - Projects must be pursuing certification under 2020 NGBS
- *Compliance criteria:* Potential for both prescriptive and performance-based criteria (point threshold and/or WRI score to meet 30% target TBD)



# 2020 NGBS Water Efficiency Chapter Compliance (Chapter 8)

## **OPTION 1: Prescriptive Path**

- **Achieve points from any of the sections, including:**
  - Indoor hot water usage
  - Water-conserving appliances
  - Showerheads
  - Faucets
  - Water closets and urinals
  - Irrigation systems
  - Rainwater Collection and Distribution
- 25 Points=Bronze; 39 Points=Silver; 67 Points=Gold; 92 Points=Emerald

## **OPTION 2: Performance Path**

- **Achieve a Water Rating Index at or below 70**
- 70 WRI Score=Bronze; 60 WRI Score=Silver; 50 WRI Score=Gold; 40 WRI Score=Emerald

# Water Rating Index

- Based on WERS (Water Efficiency Rating Score)
- Performance calculation between 0-100
- Available for both single-family and multifamily new construction
- Addresses indoor and outdoor water use and recapture



# WRI Training for NGBS Green Verifiers

New water efficiency verifier training to include:

- Explanation of water efficiency practices
- Use of WRI calculator tool
- Documentation review
- Physical field testing

Likely to be offered individually and in conjunction with NGBS Green Verifier accreditation training



# Water Performance Path Process



*Scoring*—utilize Excel-based water calculator tool to calculate baseline and preliminary WRI based on plans



*On-Site Verification*—NGBS Green Verifier confirms water features that contribute toward WRI scoring



*Review*—WRI Scoring reviewed by Home Innovation as part of certification packet. Achievement of NGBS Green and WaterSense New Homes certification to be evaluated at the same time



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[HomeInnovation.com/Green](http://HomeInnovation.com/Green)

[HomeInnovation.com/GreenProducts](http://HomeInnovation.com/GreenProducts)

**Find a better place to call home: [ngbs.com](http://ngbs.com)**



The Water Efficiency and Sanitation Standard  
An American National Standard

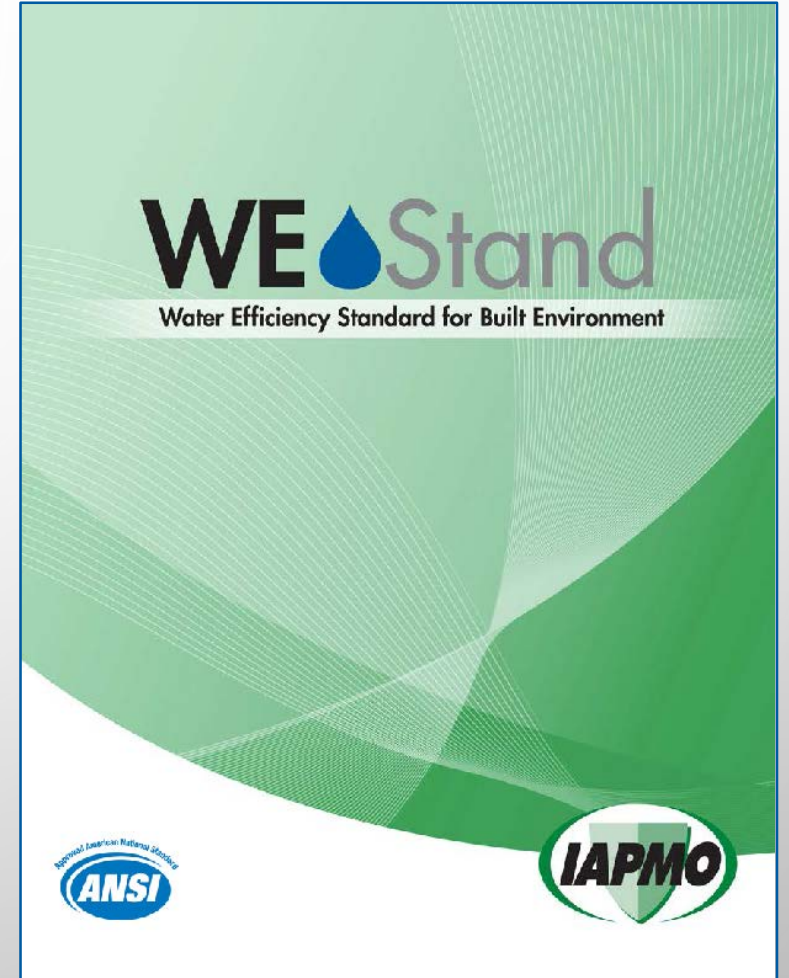
Pete DeMarco  
The IAPMO Group  
[pete.demarco@iapmo.org](mailto:pete.demarco@iapmo.org)

# Why is **WE** Stand Needed?



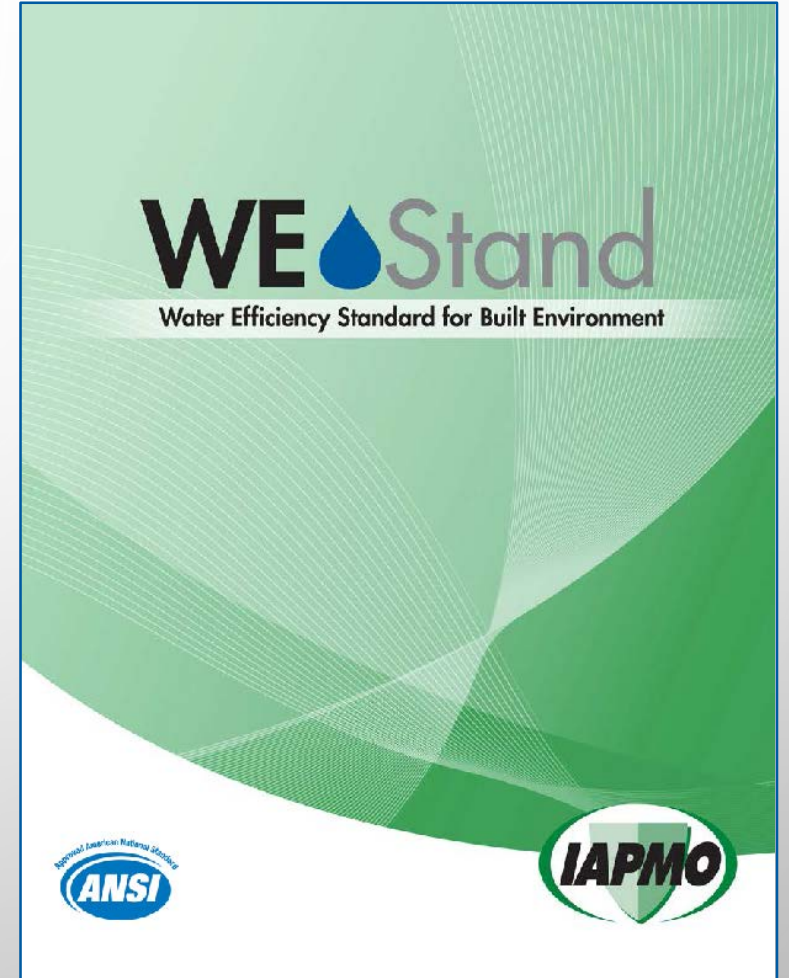
# Why is WE💧Stand Needed?

- Fills a need for an American National Standard that focuses solely on Water Efficiency in and around buildings
- Applies to both residential and non-residential buildings



# Why is WE💧Stand Needed?

- Publication as a standard allows for multiple means of adoption
- Allows for bringing together the best minds in the water efficiency and plumbing industries to develop a robust and comprehensive standard



# Who Develops WE💧Stand?

- **EXECUTIVE COMMITTEE**  
IAPMO CEO, IAPMO COO,  
AND SENIOR VP OF  
ADVOCACY AND RESEARCH  
WHO GOVERN THE  
TECHNICAL COMMITTEE
- **Technical Committee (TC)**  
Voting Members - Develops the technical  
content in WE💧Stand. Need to be balanced by  
interest categories
- **Task Groups (TGs)**  
Heavy Lifters! Created by the TC to drill down  
into specific topics or problems and develop  
proposals.
- **Technical Correlating Committee**  
Resolves conflicts with other codes, correcting  
errors and omissions
- **SECRETARIAT (IAPMO)**  
MAINTAINS RECORDS AND  
ROSTER, PUBLISHES  
REPORTS, OVERSEES  
COMPLIANCE WITH  
REGULATIONS

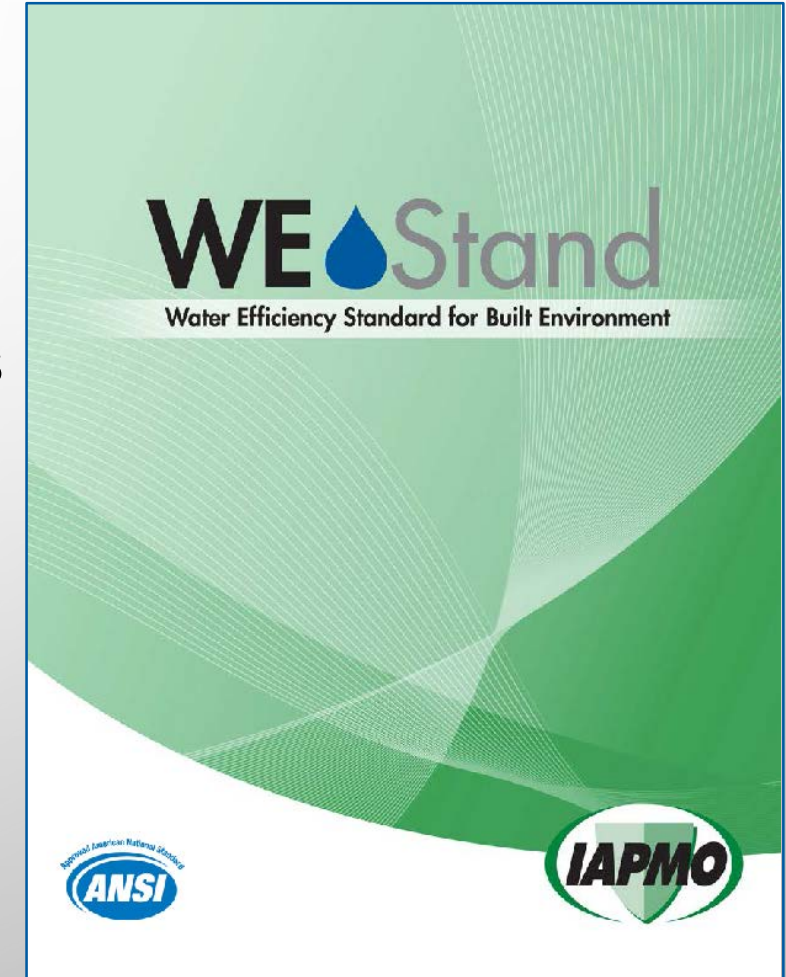
# WE STAND SUPPORTING ORGANIZATIONS



# What's In It?

## WE💧Stand Table of Contents

- ADMINISTRATION
- DEFINITIONS
- GENERAL REGULATIONS
- WATER EFFICIENCY AND CONSERVATION
- ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS
- NONPOTABLE RAINWATER CATCHMENT SYSTEMS
- WATER HEATING DESIGN, EQUIPMENT AND INSTALLATION
- INSTALLER QUALIFICATIONS
- REFERENCED STANDARDS
- APPENDICES
  - POTABLE RAINWATER CATCHMENT SYSTEMS
  - VACUUM DRAINAGE SYSTEMS



# What's In It?

## Water Efficiency for Indoor and Outdoor Uses

- Fixtures, Fittings & Appliances – Thoughtful provisions for safe and efficient consumption and flow rate requirements
- Composting – Contains the first set of comprehensive codified requirements for composting and urine diversion toilets – for commercial and residential applications.



# What's In It?

## Water Efficiency for Indoor and Outdoor Uses

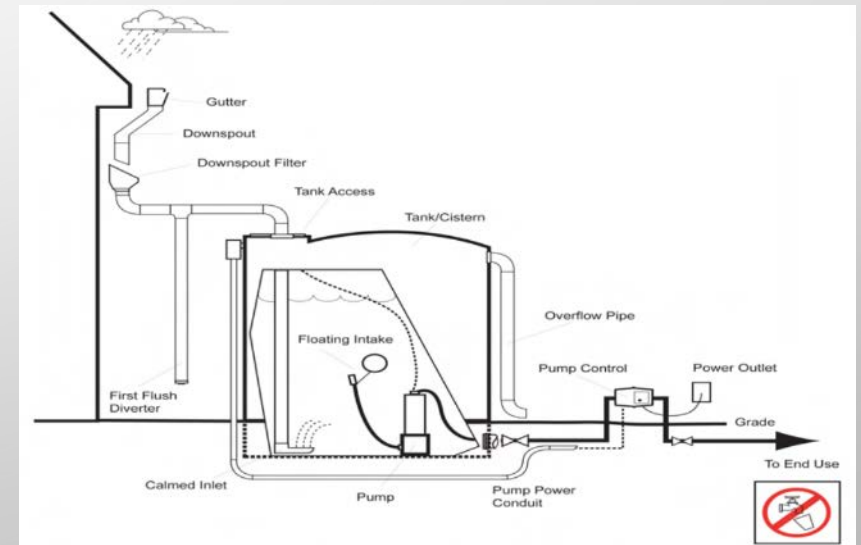
- Leak detection – Important new safety provisions for leak detection systems
- Landscape Irrigation – Important new provisions for system inspection and performance.
- New pool pumps requirements for water and energy efficiency



# What's In It?

## Alternate Water Sources

- Progressive provisions for non-potable uses of gray water generated from clothes washers to landscape irrigation.
- New requirements that reduce the cost of retrofitting gray water systems in single family homes.
- Allows for the installation of rainwater catchment systems up to 5000 gallons for non-potable uses without requiring inspections under certain conditions, reducing costs to owners



# What's In It?

## Hot Water Efficiency and Pipe Sizing

This is a big deal!

The first comprehensive pipe sizing method advancement since the 1940's

- Works with all pipe materials and residential systems of all sizes, even multifamily.



# What's In It?

## Hot Water Efficiency and Pipe Sizing

Results in:

- shorter water dwell times in premise plumbing systems
- improves water quality
- faster hot water delivery time
- saves energy, water and \$ at a reduced construction cost!



[A] FIXTURE		[B] ENTER NUMBER OF FIXTURES	[C] PROBABILITY OF USE (%)	[D] ENTER FIXTURE FLOW RATE (GPM)	[E] MAXIMUM RECOMMENDED FIXTURE FLOW RATE (GPM)
1	Bar Sink	0	2.0	1.5	1.5
2	Bathtub	0	1.0	5.5	5.5
3	Bidet	0	1.0	2.0	2.0
4	Clothes Washer	1	5.5	3.5	3.5
5	Combination Bath/Shower	1	5.5	5.5	5.5
6	Dishwasher	1	0.5	1.3	1.3
7	Kitchen Faucet	1	2.0	2.2	2.2
8	Laundry Faucet	0	2.0	2.0	2.0
9	Lavatory Faucet	1	2.0	1.5	1.5
10	Shower, per head	0	4.5	2.0	2.0
11	Water Closet, 1.28 GPF Gravity Tank	1	1.0	3.0	3.0
12	Other Fixture 1	0	0.0	0.0	6.0
13	Other Fixture 2	0	0.0	0.0	6.0
14	Other Fixture 3	0	0.0	0.0	6.0

Total Number of Fixtures      6

99th PERCENTILE DEMAND FLOW =      **8.5**      GPM

**RESET**

**RUN WATER  
DEMAND  
CALCULATOR**

Typical Pipe Size Reductions:  
Single Family = 1 pipe size  
Multi-family = Up to 3 pipe sizes!

# Where and How Does it Happen?

All WE💧Stand meetings are convened in Ontario, CA

Two Stages of Development:

## 1. Proposal Stage

- a) Call for submission and publication of proposals
- b) Open meeting for TC actions on the proposals
- c) Letter Ballot affirmation on TC actions
- d) Publication of the Report on Proposals

# Where and How Does it Happen?

All WE💧Stand meetings are convened in Ontario, CA

Two Stages of Development:

## 2. Comment Stage

- a) Call for public comments on TC actions in the ROP
- b) Open meeting for TC actions on the public comments
- c) Letter ballot affirmation on TC actions
- d) Publication of the Report on Comments

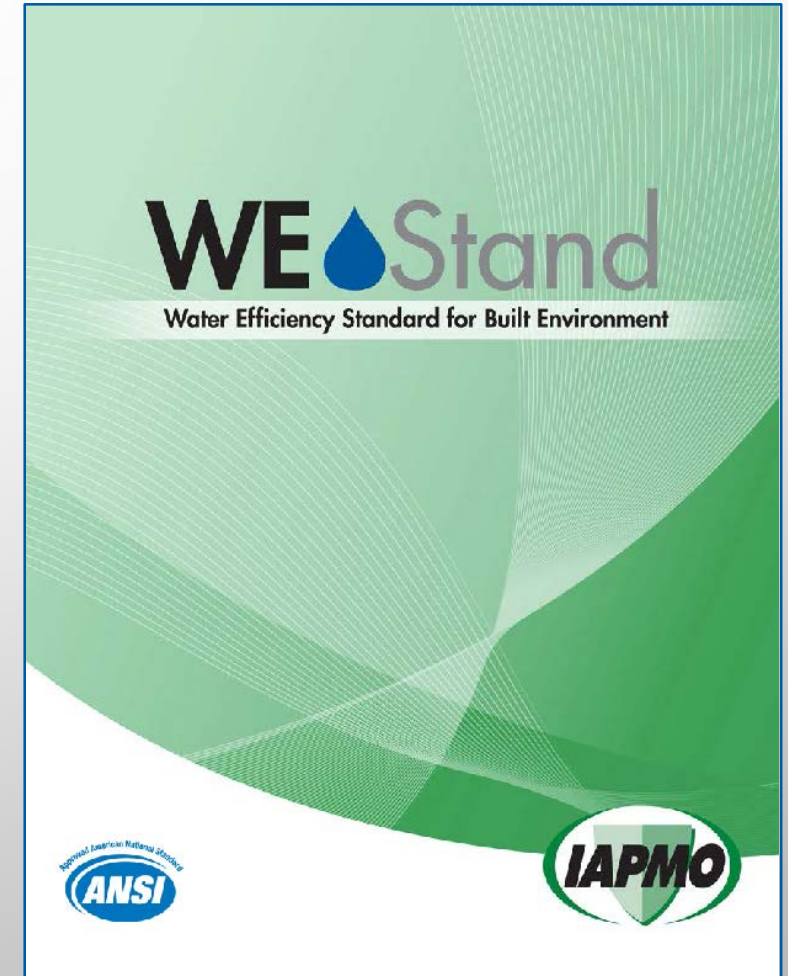
# When Does it Happen?

## Key Remaining for the 2020 Cycle

November 28, 2019....	Deadline for Submission of Public Comments
February 27, 2020.....	Distribution of Public Comments to Committee (Public Comment Monograph)
March 24-25, 2020.....	Technical Committee Meetings, Ontario, CA
April 17, 2020.....	Initial Ballots to Technical Committees
May 1, 2020.....	Receipt of Initial Ballots and Circulation of Comments
May 15, 2020.....	Final closing date for ballots, including receipt of vote changes based on re- circulated comments
July 15, 2020.....	Distribution of <i>Report on Comments (ROC)</i>
September 29, 2020....	Deadline for Notification of Intent to File Written Petition to the Executive Committee
November 12-13, 2020	Executive Committee Meet to Address Petitions

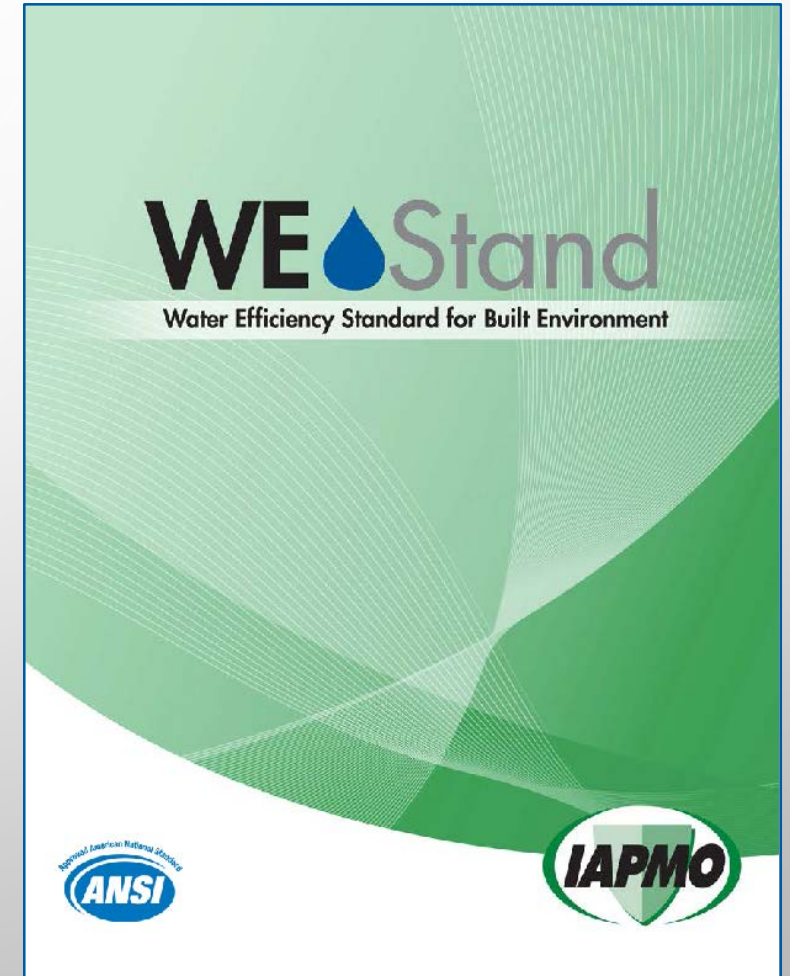
# What's Next for the 2020 WE<sup>💧</sup>Stand?

- Alternate Water Sources
  - New requirements for stormwater treatment and uses
  - New requirements for black water treatment and uses
- Net Zero Water and Waste
  - Considerations for safely attaining net-zero water and waste performance in buildings



# What's Next for the 2020 WE<sup>💧</sup>Stand?

- Premise Water Supply Systems
  - Efficient Arrangement of plumbing fixtures – Compact Distribution Strategies – improves water and energy efficiency and water quality
  - Appropriate uses and maximum length requirement for 3/8" diameter tubing

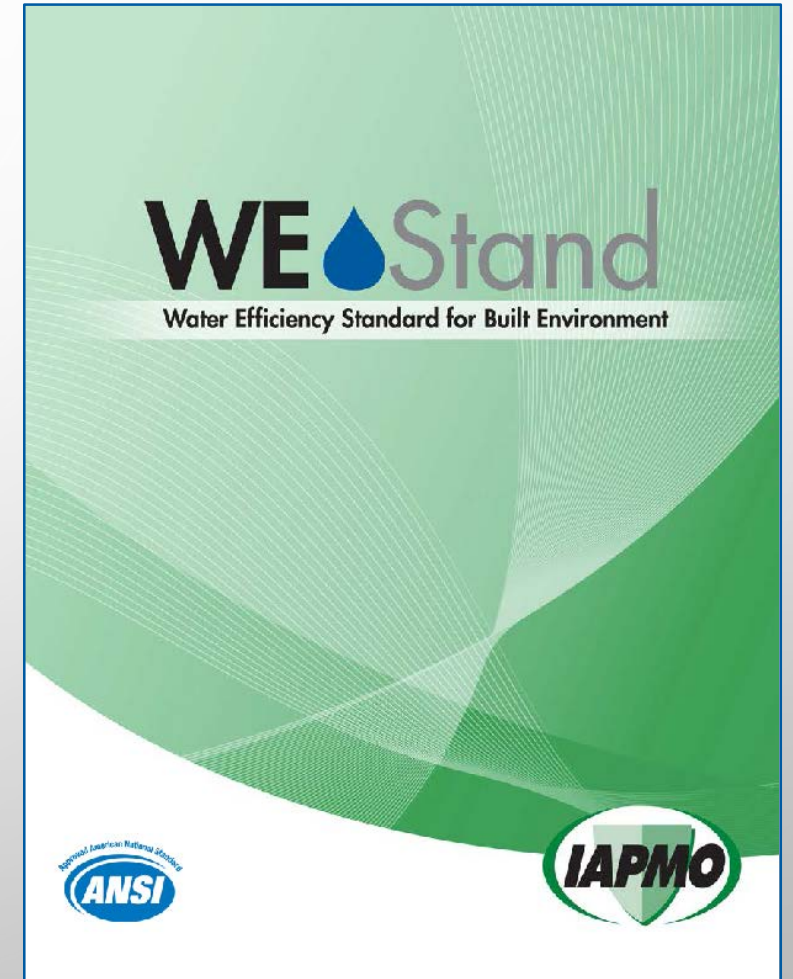


# What's Next for the 2020 WE💧Stand?

- Composting and Urine Diversion Toilets
  - Informative Appendix on installation and maintenance
- Sustainable Drinking Water Treatment
  - New references of industry standards

Help shape the future of safe  
and sustainable water

WE💧Stand is where it happens!



# WE Thank you!!

## WE Stand

An American National Standard



## Water Efficiency and Sanitation for the Built Environment

FOR MORE INFORMATION VISIT

[HTTP://WWW.IAPMO.ORG/WEStand/PAGES/DEFAULT.ASPX](http://www.iapmo.org/weStand/PAGES/default.aspx)

# The Green Builder® Coalition

- National, non-profit membership organization for green building professionals
- Founded in 2010
- Offers information, technical assistance and advocacy services
- Administers the WERS Program



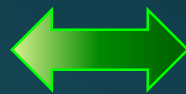
# What is the Water Efficiency Rating Score?



New/Existing



WERS = 70



WERS = 50



3rd Party

WERS FINAL SUMMARY

Do you want to show a comparison to the Preliminary report? ☐ N

Project Type: ☒ NEW ☐ Single Home

Indoor Use and Conservation Summary

	DAY	MONTH	YEAR	CPD
GALLONS USED PER:	248	7,467	89,604	62
GALLONS SAVED PER:	6	185	2,224	2
AVERAGE CONSERVATION BASELINE VS. FINAL				
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00

Outdoor Use and Conservation Summary

	DAY	WATERING MONTHS	YEAR	CPD
GALLONS USED PER:	112	27,372	169,624	126
GALLONS SAVED PER:	141	3,618	25,324	18
AVERAGE CONSERVATION BASELINE VS. FINAL (WATERING MONTHS ONLY)				
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00

Combined Use and Conservation Summary

	DAY	MONTH	YEAR	CPD
GALLONS USED PER:	361	10,541	129,428	94
GALLONS SAVED PER:	147	3,803	27,548	20
AVERAGE CONSERVATION BASELINE VS. FINAL				
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00
SAVINGS PER:	\$0.00	\$0.00	\$0.00	\$0.00

WERS: ☒ NO REUSE CREDITS ☐ WITH WATER REUSE CREDITS

NOT FINAL

Score = 0 to 100

The WERS tool can be used by homeowners, architects, builders, utilities and municipalities to arrive at a simple metric to compare new or existing, single-family or multifamily properties

# WERS Abbreviated Timeline

- Oct. 2013 – SFAHBA & City of Santa Fe WCC brainstorm
- Feb. 2014 – Engage Coalition for tech assistance, computer programming, national administration
- Today – WERS is allowed in 2 codes, 1 tax credit, pending in 2 national green building programs



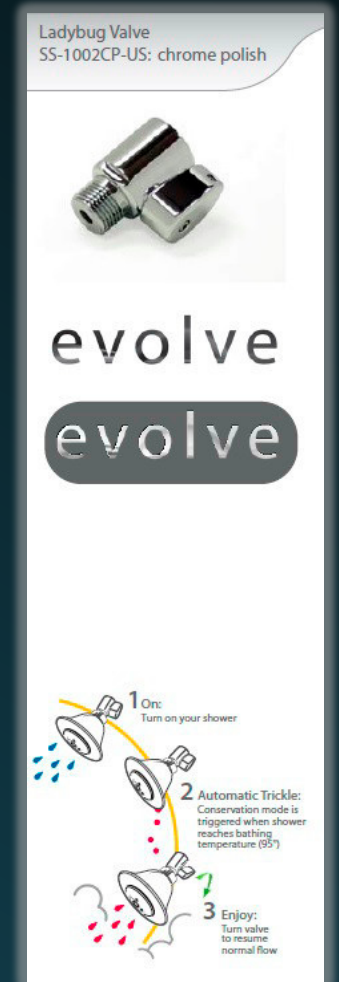


# Water Efficiency Rating Score (WERS)<sup>®</sup>

- Outputs
  - Score: 0-100
  - Projected Usage in Gallons: Daily, Monthly and Yearly
  - Projected Water Costs: Daily, Monthly and Yearly
  - Existing Homes – Compare Existing Conditions to Improvements

# Water Efficiency Rating Score (WERS)<sup>®</sup>

- Partner Discounts
  - 45% - TSV showerheads
  - 20% - rainwater or graywater
  - 20% - irrigation controllers
  - 20% - ultra-low water turfgrass



# Inputs (Indoor)

- Faucets
- Toilets
- Showers/Tubs
- Structural Waste
- Reuse Systems (Rain, Gray, Black)
- Clothes & Dish Washers
- Fridge w/ Water Dispenser
- RO/Water Softeners
- Hot Tubs/Fountains/Pool

Fixture or Appliance	Industry Baseline (Items A - F2) GPF / GPM / GPC / etc.	Preliminary Units GPF / GPM / GPC / etc.	Applicable to Preliminary?	Final Verified Units GPF / GPM / GPC / etc.	Applicable to Final?	Preliminary Daily Use in Gallons	Preliminary Gallons Saved Over Baseline	Percent Saved Per Fixture (Baseline vs. Preliminary)	Final Daily Use in Gallons	Final Verified Gallons Saved Over Baseline	Percent Saved Per Fixture (Baseline vs. Final)
Toilet (GPF) Using verified 1.28	1.60	1.28	Y	1.28	Y	32.00	8.00	20.00%	32.00	8.00	80.00%
Showerhead (GPM) Using verified 1.346	2.50	1.50	Y	1.35	Y	40.37	26.91	40.00%	36.22	31.05	53.84%
Bathtub (GPU)	20.20	20.20	Y	20.20	Y	7.07	0.00	0.00%	7.07	0.00	NONE
Lavatory (GPM) Using verified 1.224	2.20	1.50	Y	1.22	Y	9.38	4.38	31.82%	7.65	6.10	55.64%
Sink (GPM) Using verified 1.8	2.20	2.00	Y	1.80	Y	40.00	4.00	9.09%	36.00	8.00	81.82%
Dishwasher (GPC) Using verified 3.5	6.50	5.80	Y	3.50	Y	2.90	0.35	10.77%	1.75	1.50	53.85%
Clothes Washer CF Using verified 4.5		4.00		4.50							
Clothes Washer iWF Using verified 3.2	9.50	4.30	Y	3.20	Y	25.80	31.20	54.74%	21.60	42.53	33.68%
Water used to reach 100 degrees (GPU WERS estimated)	2.54	1.20		2.75		0.00	0.00	0.00%	13.75	0.00	NONE
Separate Master Tub?	N	N		N							
HW Recirc System?	N	N		N							



# Inputs

- Indoor:

- Faucets
- Showers/Tubs
- Clothes & Dish Washers
- Fridge w/ Water Dispenser
- RO/Water Softeners
- Hot Tubs/Fountains/Pools
- Reuse Systems (Rain, Gray, Black)
- Structural Waste

- Outdoor:

- Irrigation Systems
- All Plantings
- Soil Type/Grade
- Roof Type
- Pervious & Impervious Surfaces
- Pools
- Rainwater & Graywater Systems

# WERS Training

- WERS Verifier
  - 3-day course
  - Classroom & Field Training
  - Proctored Exams (Written & Field)
  - 3 Probationary Verifications
- WERS Consultant
  - 2-day course
  - Classroom Training
  - Proctored Written Exam
  - 2 Probationary Assessments (based on plans, drawings)
- Santa Fe Community College
  - BPI-accredited Test Center
  - Hosted Inaugural Course in March 2016
  - Info: [www.energysmartacademy.com/water.html](http://www.energysmartacademy.com/water.html)



# Who Can Utilize WERS?

- Jurisdictions/Municipalities
  - Tax credits/Financial incentives
    - WERS cited in the rules for compliance of NM Sustainable Building Tax Credit since Jan. 1, 2017
  - Support of codes, regulations, and enforcement
    - Went into effect in the City of Santa Fe March 1, 2017
    - All new single-family properties must submit a preliminary WERS of 70 (or less) with their building permit application, and a verified 70 (or less) to obtain a certificate of occupancy
    - City of Santa Barbara, CA allows 3<sup>rd</sup> party programs as code compliance option for multifamily as of Sept. 2018



# Who Can Utilize WERS?

- Green Building Programs
  - Built Green Canada
    - Metric added to the WERS Tool in Q2 2019
    - Piloting WERS in 2019; Full implementation expected in 2020
    - Verifier Training occurred May 2019



# Who Can Utilize WERS?

- Green Building Programs
  - Built Green Canada
    - Metric added to the WERS Tool in Q2 2019
    - Piloting WERS in 2019; Full implementation expected in 2020
    - Verifier Training occurred May 2019
  - National Green Building Standard
    - WRI (generic WERS) will be in 2020 NGBS (ANSI Standard)
    - Applicable to multifamily & single-family
    - Alternative compliance path for water efficiency
    - Scale
      - 70 – Bronze
      - 60 – Silver
      - 50 – Gold
      - 40 – Emerald



# Who Can Utilize WERS?

- Jurisdictions/Municipalities
  - Potential financial incentives
    - Reduced storm water impact fees
    - Reduced tap fees
    - Shortened permit review time



# Quality Control/Quality Assurance

- QC:
  - QC Entity is Required
  - Raters Can Utilize Existing Provider(s) for QC
- QA:
  - TIC is Selected at Project Initiation
  - QC is Confirmed Pre-Submittal
  - QC Entity is subject to QA



# WERS – Triconic Partnership

- Green Builder® Coalition needed to scale WERS
- Combining with energy ratings creates efficiencies



# WERS – Triconic Partnership

- Green Builder® Coalition needed to scale WERS
- Combining with energy ratings creates efficiencies
- UL, Intertek label delivers peace of mind to jurisdictions
- Intertek has 5,000 inspectors in North America



# Rebate packages

- WERS can help project usage differentials on:
  - Indoor Incentives (i.e., Toilet Retrofits)
  - Outdoor Incentives (i.e., Recharge, Collection & Reuse)
  - Other usage reduction targets
  - Whole property rebates!!
- Collaboration on crafting & administering rebate programs



# WERS Walk-Through Webinars

- Utilities & Municipalities:  
We want to work with you!

- **Incentives**

- Rebates
- Reduced Fees

- **Codes**

- New Construction
- Point-of-Sale

- For more info, please  
pick up a card  
or e-mail:

[info@greenbuildercoalition.org](mailto:info@greenbuildercoalition.org)

Project Type		NEW	Single Home				
Indoor Use and Conservation Summary				DAY	MONTH	YEAR	CPD
AVERAGE CONSERVATION BASELINE VS.	GALLONS USED PER:			156	4,746	56,955	31
	GALLONS SAVED PER:			96	2,924	35,084	19
				WITHOUT REUSE CREDITS			
	SAVINGS PER:			\$3.20	\$97.35	\$1,168.24	\$0.64
				WITH REUSE CREDITS			
SAVINGS PER:			N/A	N/A	N/A	N/A	
Outdoor Use and Conservation Summary (Watering Months Only)				DAY	WATERING MONTHS	WM / YEAR	CPD
AVERAGE CONSERVATION BASELINE VS.	GALLONS USED PER:			117	3,504	21,025	23
	GALLONS SAVED PER:			73	2,182	13,094	15
				WITHOUT REUSE CREDITS			
	SAVINGS PER:			\$0.44	\$13.22	\$79.35	\$0.09
				WITH REUSE CREDITS			
SAVINGS PER:			N/A	N/A	N/A	N/A	

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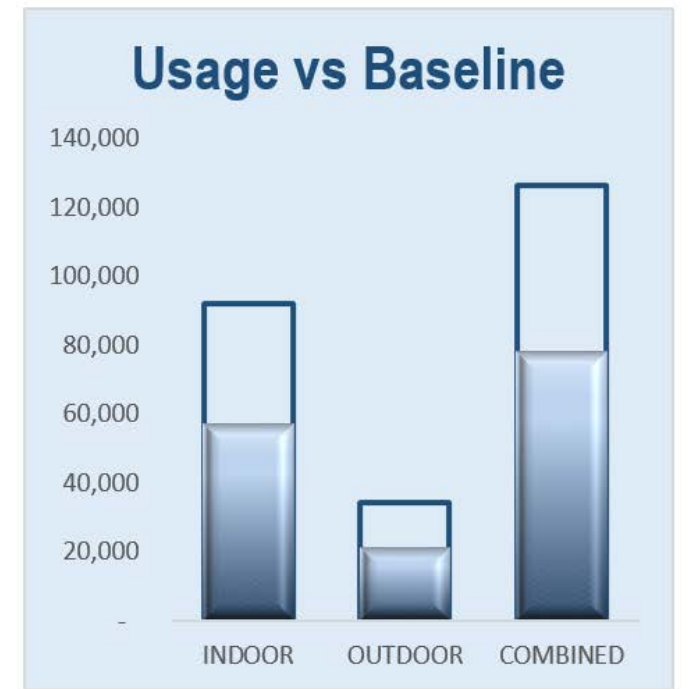
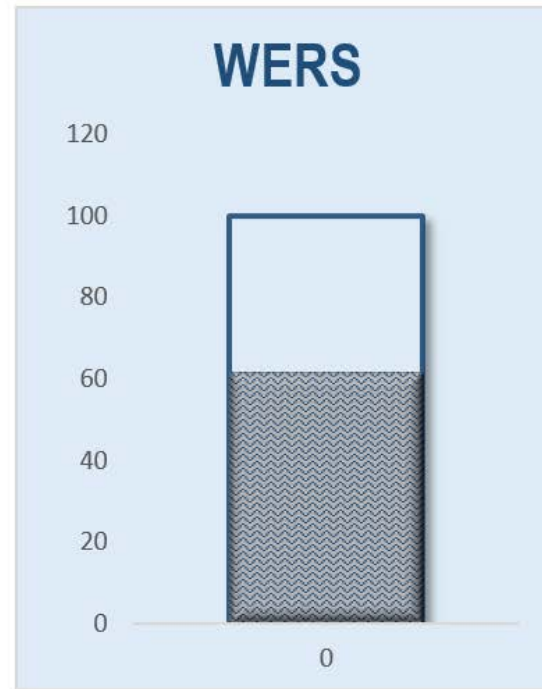
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Projections



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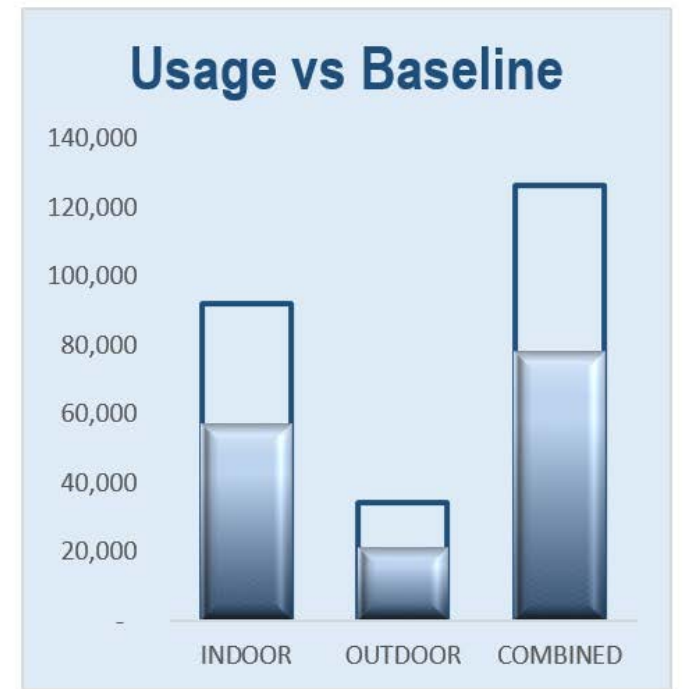
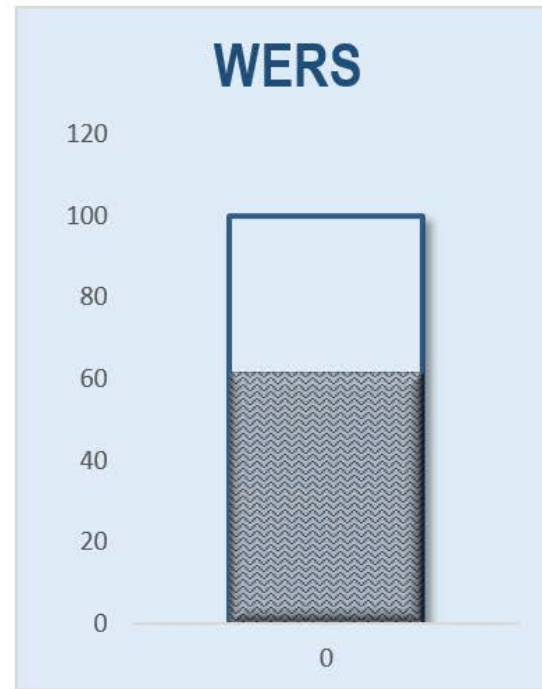
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Projections





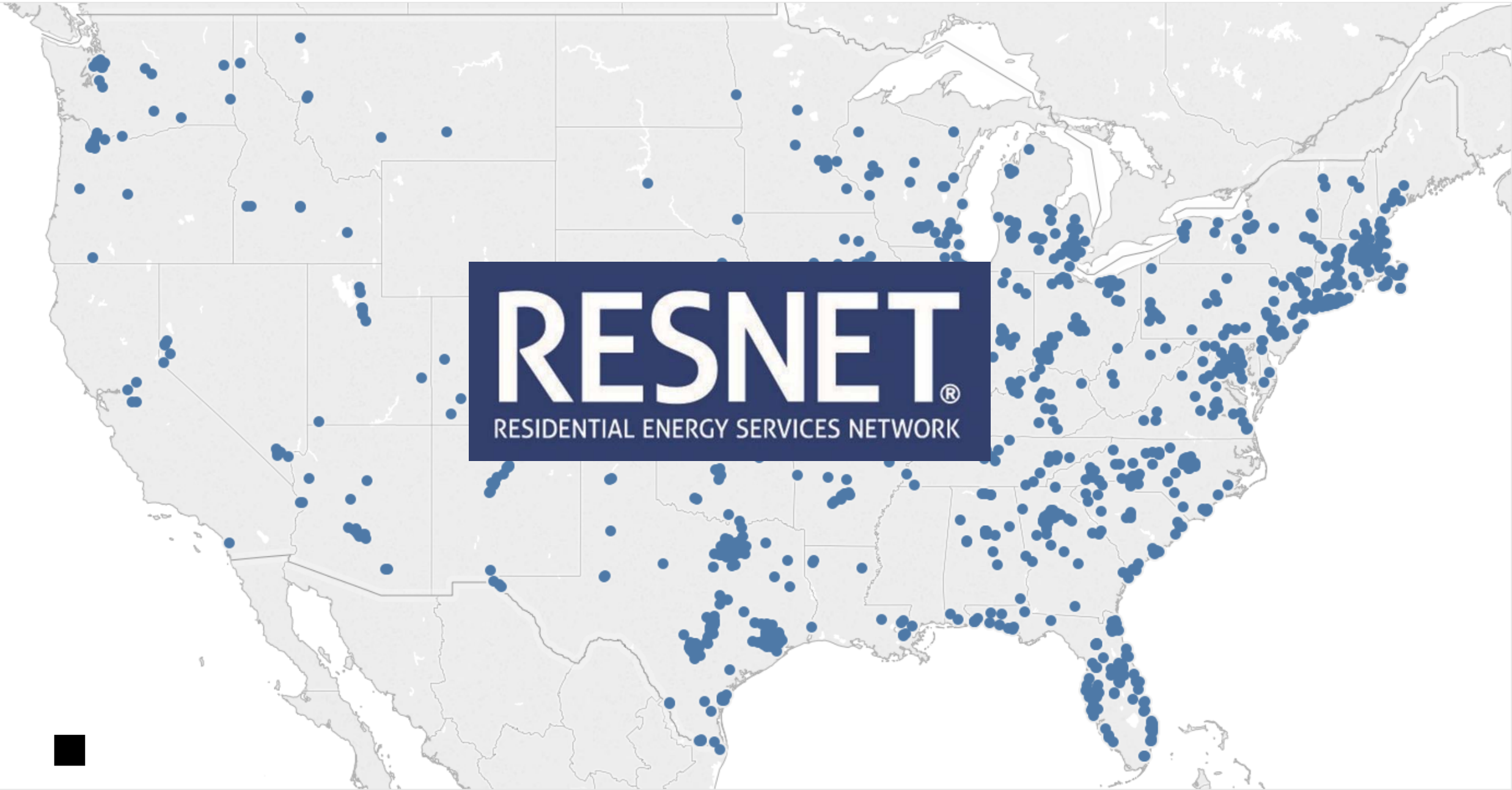
# Introducing HERS<sub>H2O</sub>

Ryan Meres, Program Director  
RESNET





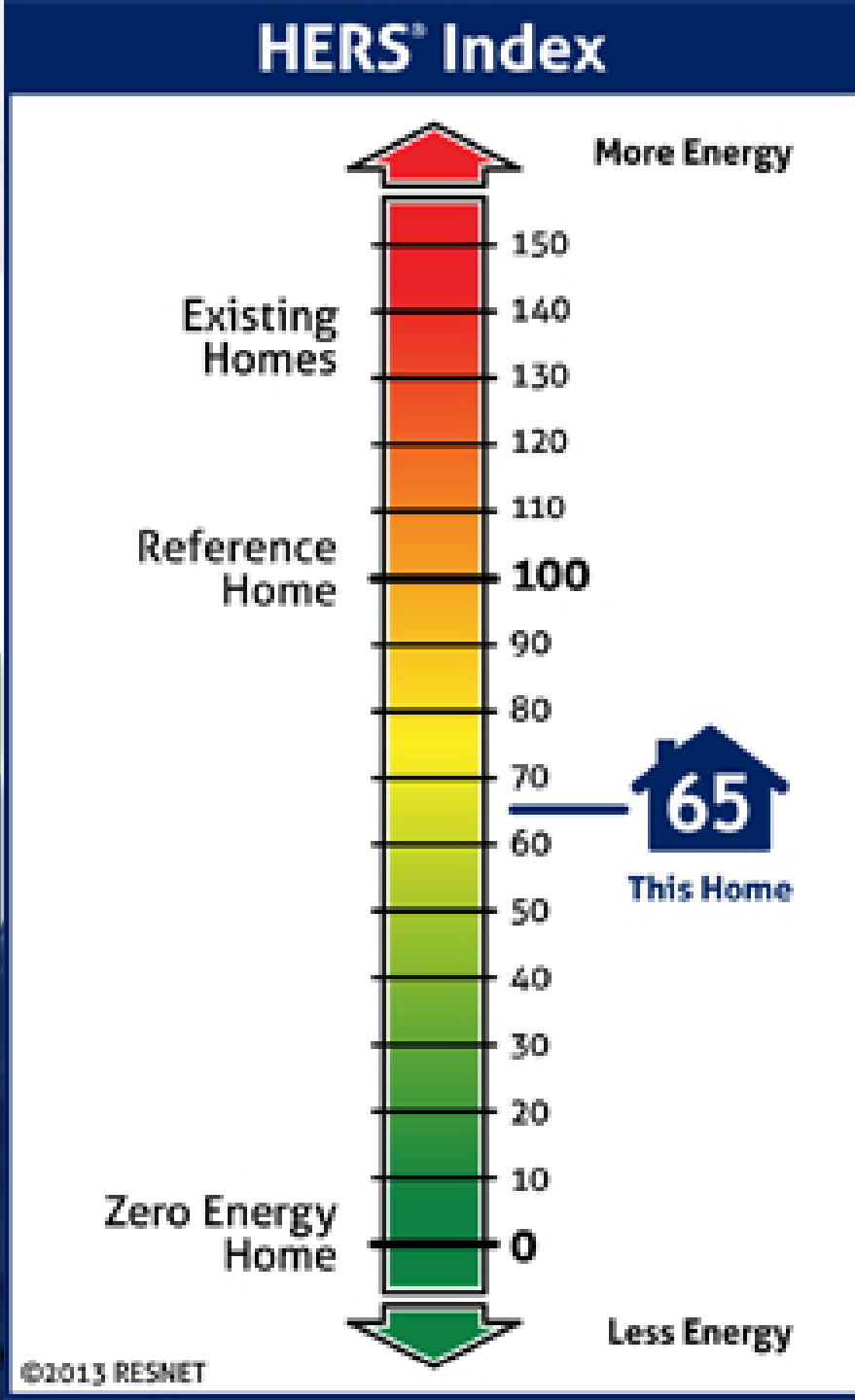
# RESNET's Network of Certified HERS Raters and Rating Field Inspectors



# Get a Home Energy Rating

A comprehensive HERS home energy rating, conducted by a certified RESNET Home Energy Rater is an in-depth energy performance assessment of a home.

State	Area	Company	Name
Search for Home Energy Raters in your state.			
<div>Select a State</div>			
<div>Find a HERS Rater</div>			





designed by  vexels



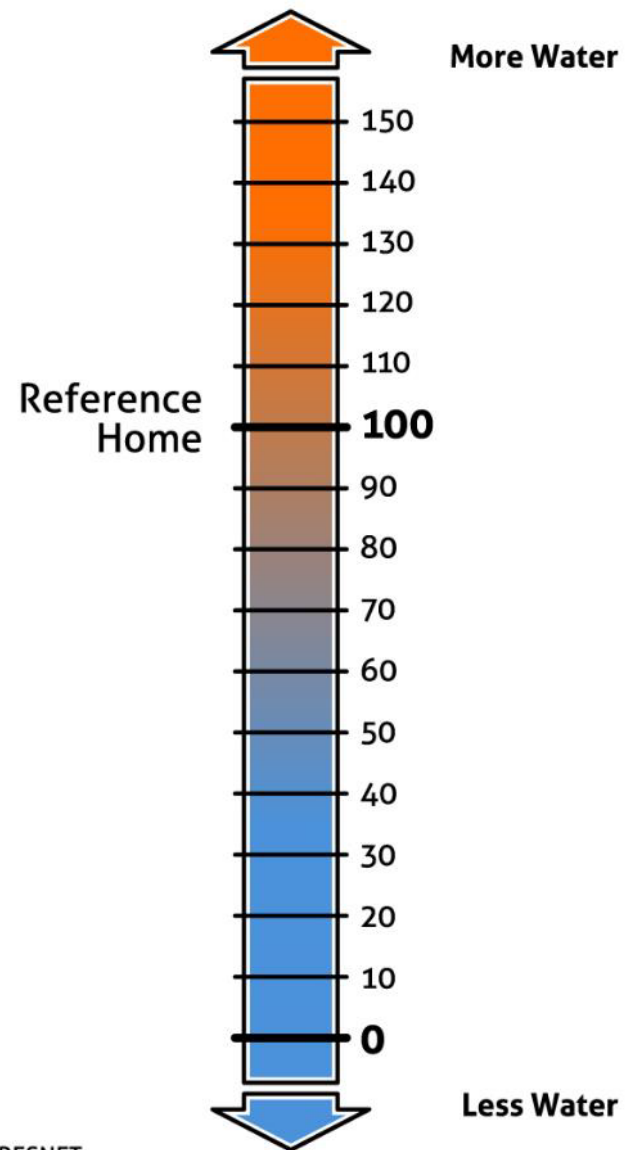
RESNET

HERS<sub>H2O</sub>





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



©2017 RESNET







Shower Heads



Kitchen Faucet



Lavatory  
Faucets



Clothes Washer



Toilet Flush  
Volume



Water Softener



Leaks/Other  
Water Use



Excess Pressure



Irrigation



Pool or Spa



# ANSI/RESNET/ ICC 850

## Standard for Water Rating Index

American National Standard

DRAFT

3

4

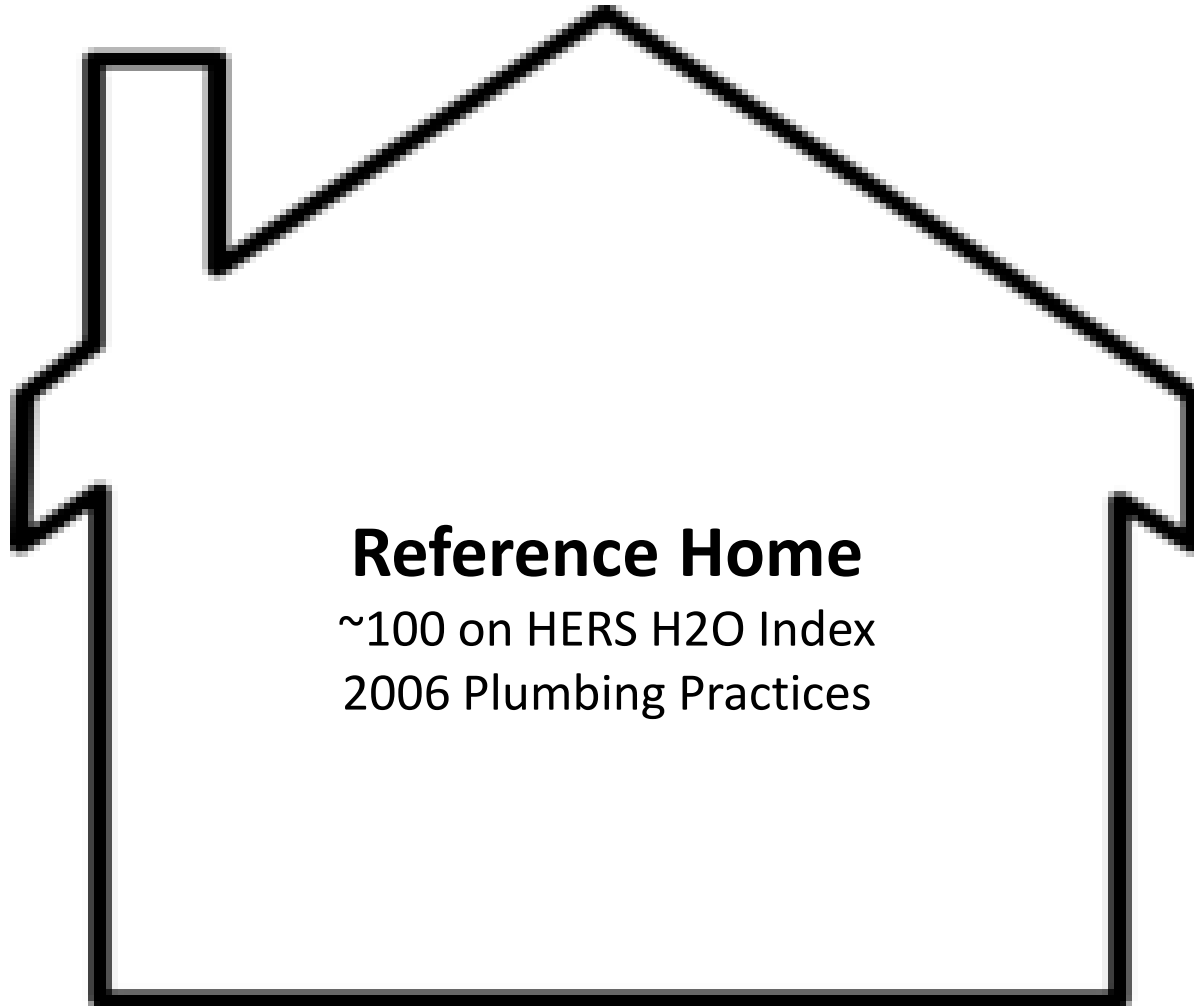
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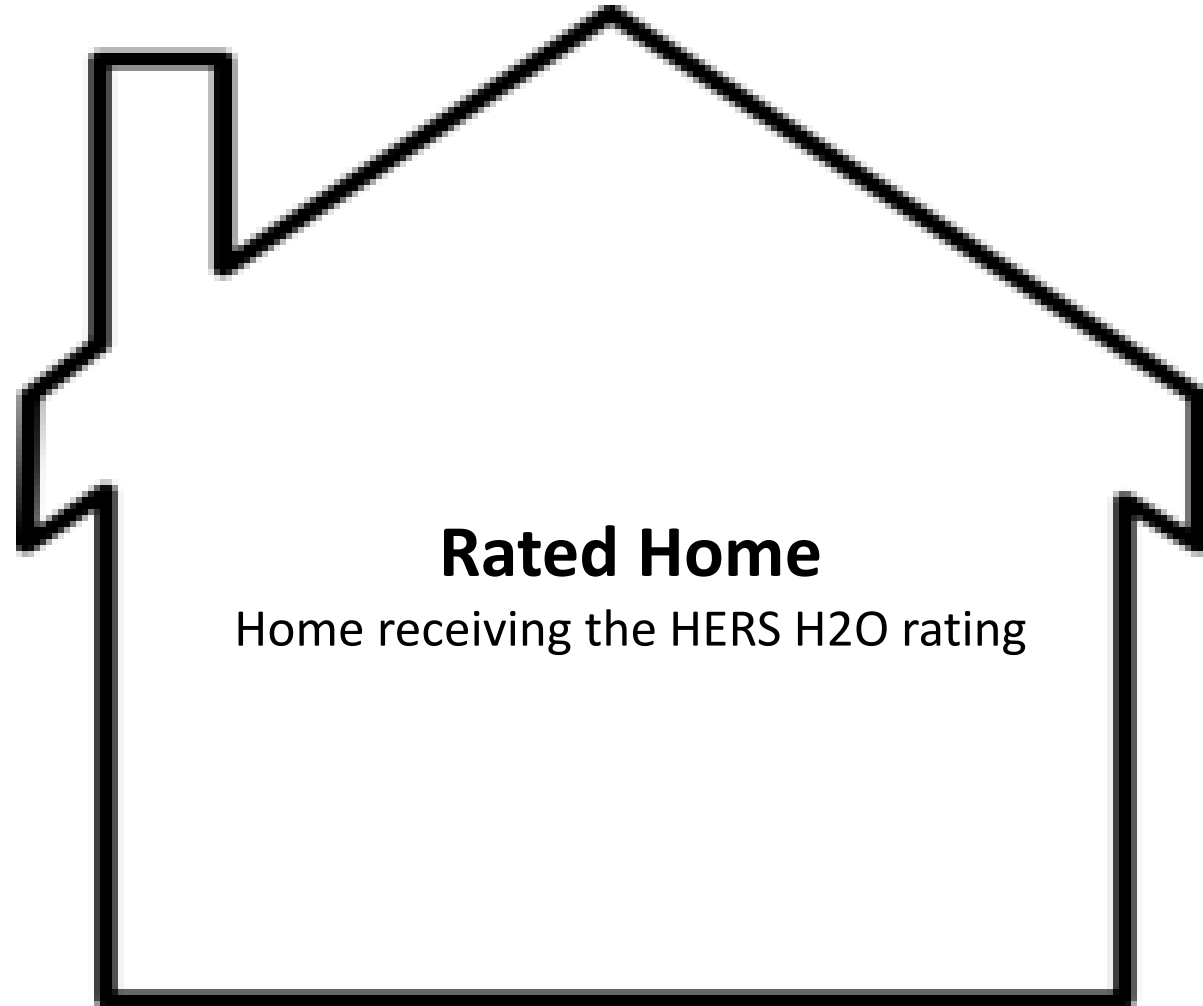
RESNET  
RESIDENTIAL ENERGY SERVICES NETWORK





## **Reference Home**

~100 on HERS H2O Index  
2006 Plumbing Practices



## **Rated Home**

Home receiving the HERS H2O rating



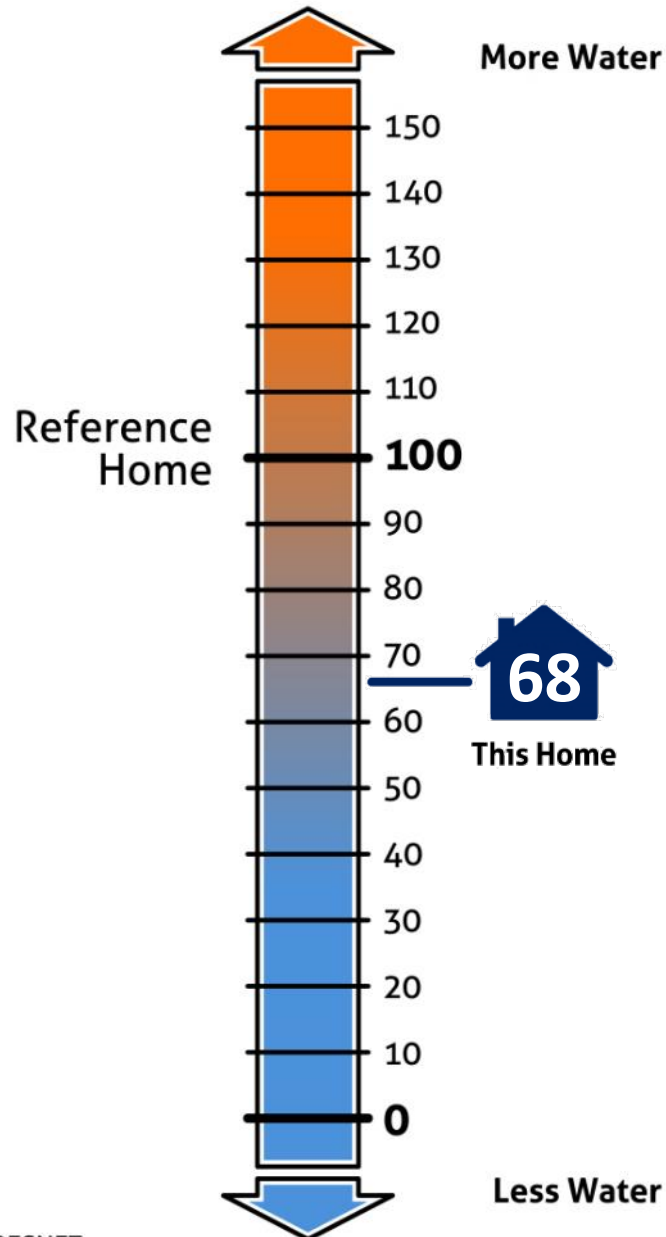








# RESNET HERS<sub>H2O</sub> Index



©2017 RESNET

## • Water efficiency rating certificate for:

- 100 Sunshine Dr.
- Irvine, CA 90000

Size of home:	1980 sq. ft.
Number of bedrooms:	3
Size of lot:	5000 sq. ft.
Size of irrigated area:	2000 sq. ft.

## This Home, Compared to the Reference Home

(Reference home is similarly sized, at same location, with attributes typical of a 2006 home)

# 32%

more water  
efficient

# 34,080

gallons of water  
annual savings

# \$175

annual saving on water utility bills

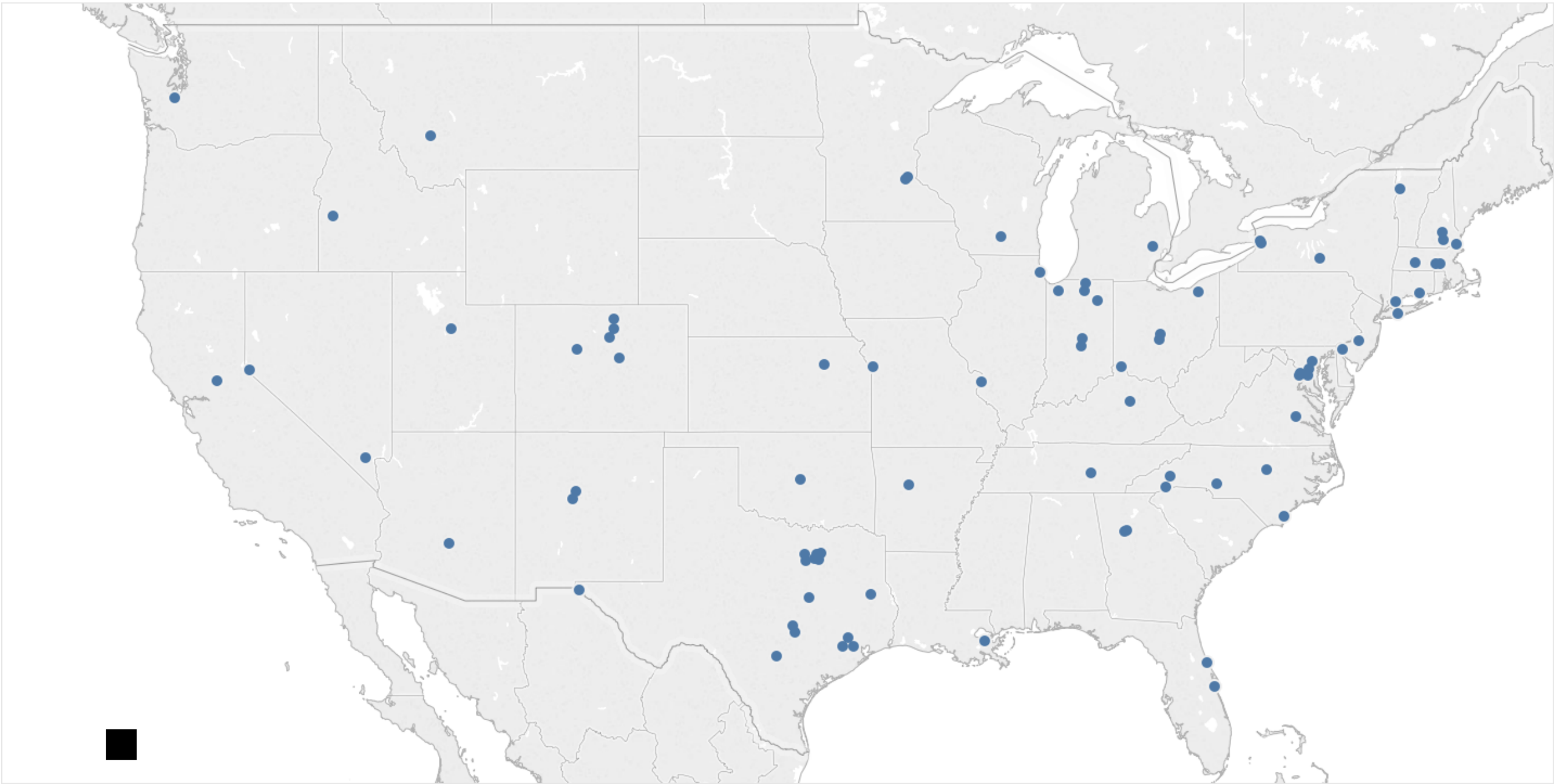
## Rated by:

Justin Miller  
Efficiency Unlimited  
Santa Ana, CA 90000

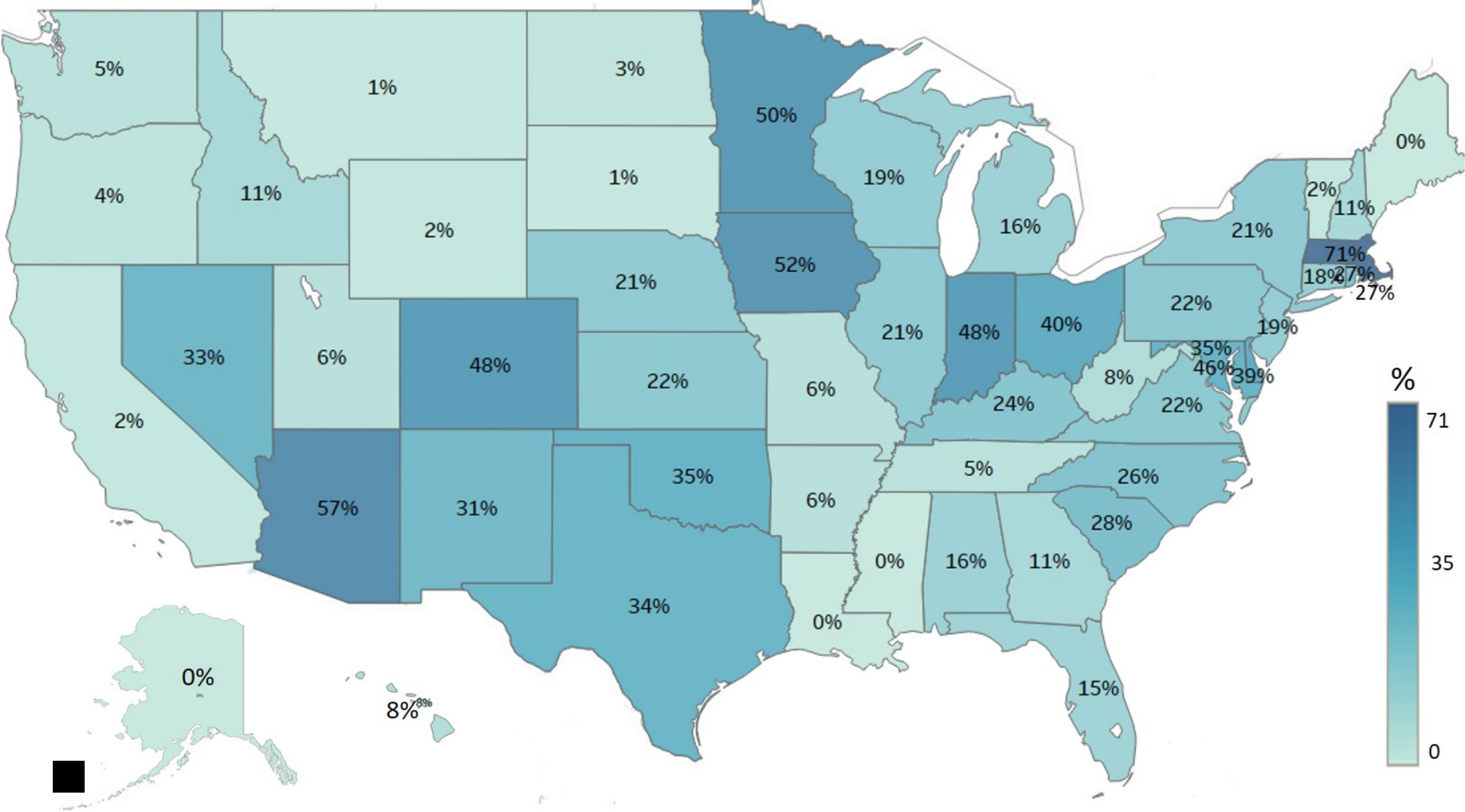
Date: January 19, 2018



# RESNET Provider Network



# Percent of New Homes HERS Rated, 2018





RESNET's quality assurance oversight of HERS Raters begins while they are still candidates and lasts throughout their work as certified HERS Raters:



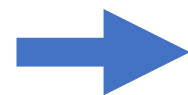
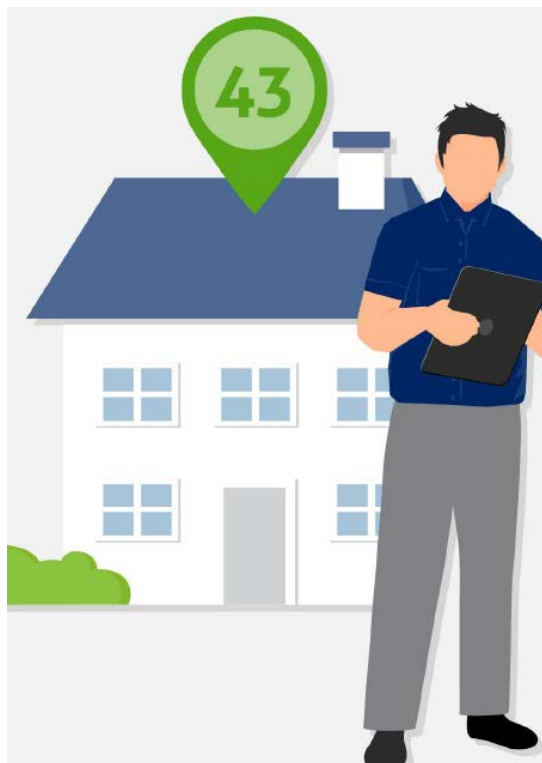
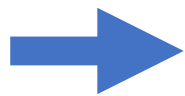
Once certified, the HERS Rater must undergo the following quality assurance oversight activities annually:

- ✓ **10 % of all homes rated** must be file reviewed by a certified RESNET Quality Assurance Designee.
  - A non-biased selection of homes is reviewed, accounting for new and existing homes, geographic location, builder, trade contractor, variety of floor plans, etc.
- ✓ **1% of all homes rated** must be field reviewed by a certified RESNET Quality Assurance Designee.
  - Each home selected for a QA field review for each HERS Rater shall be randomly selected from as many different builders and communities as possible.



**“QA Genie”**





# Discussion Questions

- How does your system measure efficiency? How does it meet the 30% efficiency requirements?
- How do you ensure “verifiers” are qualified for this task?
- How do you/do you to exercise oversight? How do you ensure homes meet all the requirements?
- How does WaterSense labeled homes V2 fit into your organizations priorities?