HERS$_{H2O}$ and WaterSense 2.0:

A National Program for Rating the Water Efficiency of New Homes

Thank you for joining! The webinar will begin shortly.

Ryan Meres, RESNET

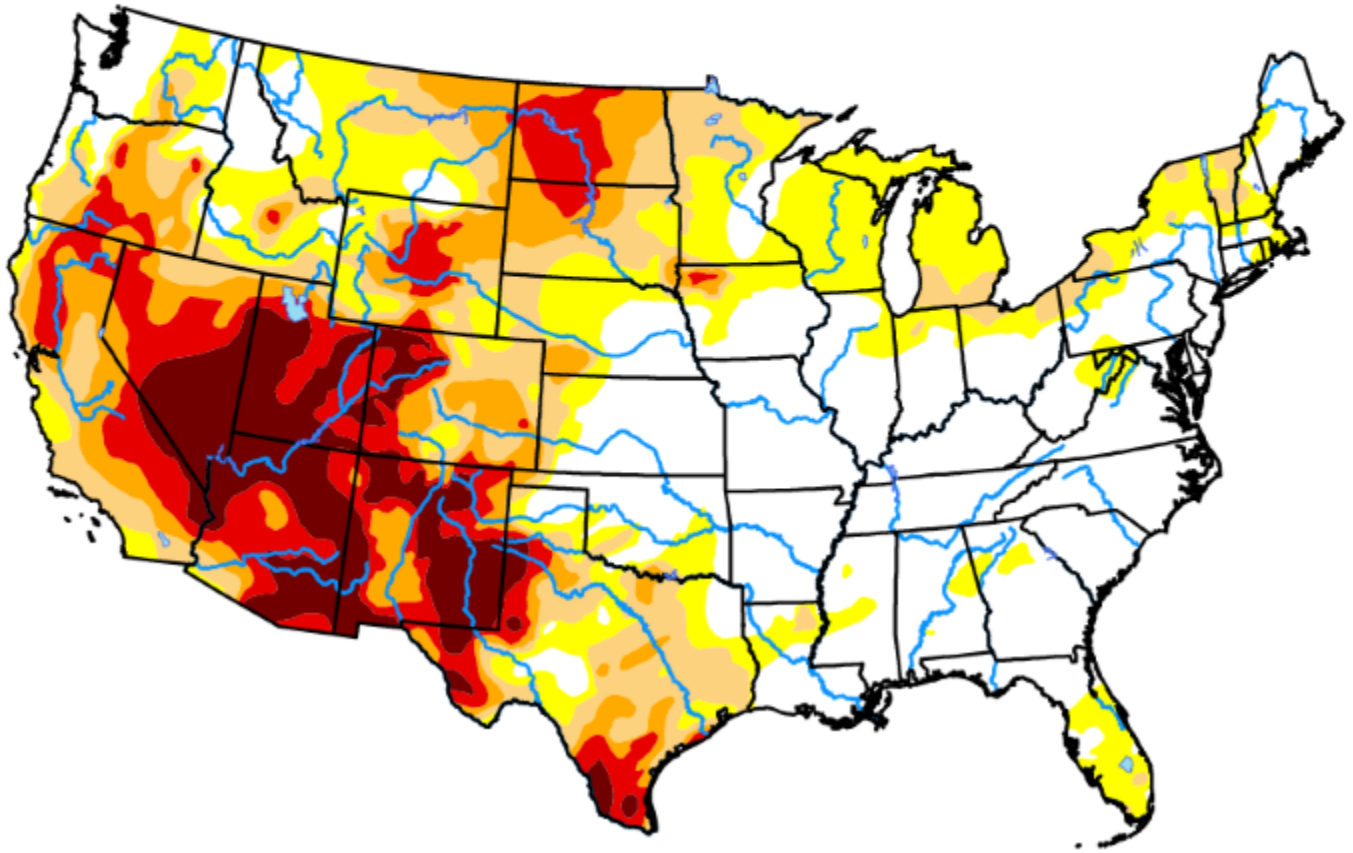
Agenda

- Overview
- The Need for Water Efficiency
- HERS$_{H2O}$ and WaterSense V2
- The Process for HERS$_{H2O}$ Ratings

Overview

- HERS H2O builds off the HERS Rating
- A national program that has fully launched!
- Can be used to achieve the WaterSense Label for Homes (V2)
- Certified HERS Raters/RFIs can offer H2O Ratings with ~3 hours of online training

Drought Monitor for April 1st



Map released: Thurs. April 1, 2021

Data valid: March 30, 2021 at 8 a.m. EDT

Intensity:

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Author(s):

Brad Pugh, NOAA/CPC

Building Permit Approvals at Risk Over Water Supply?

- New development putting a strain on some local water utilities
- Can lead to moratorium on new permits
- Can increase tap fees
- H2O Ratings provide metric to estimate consumption

Coastal Commission denies permit to build new home in Cambria due to 'water supply' issues

BY KATHE TANNER

NOVEMBER 21, 2019 04:45 AM

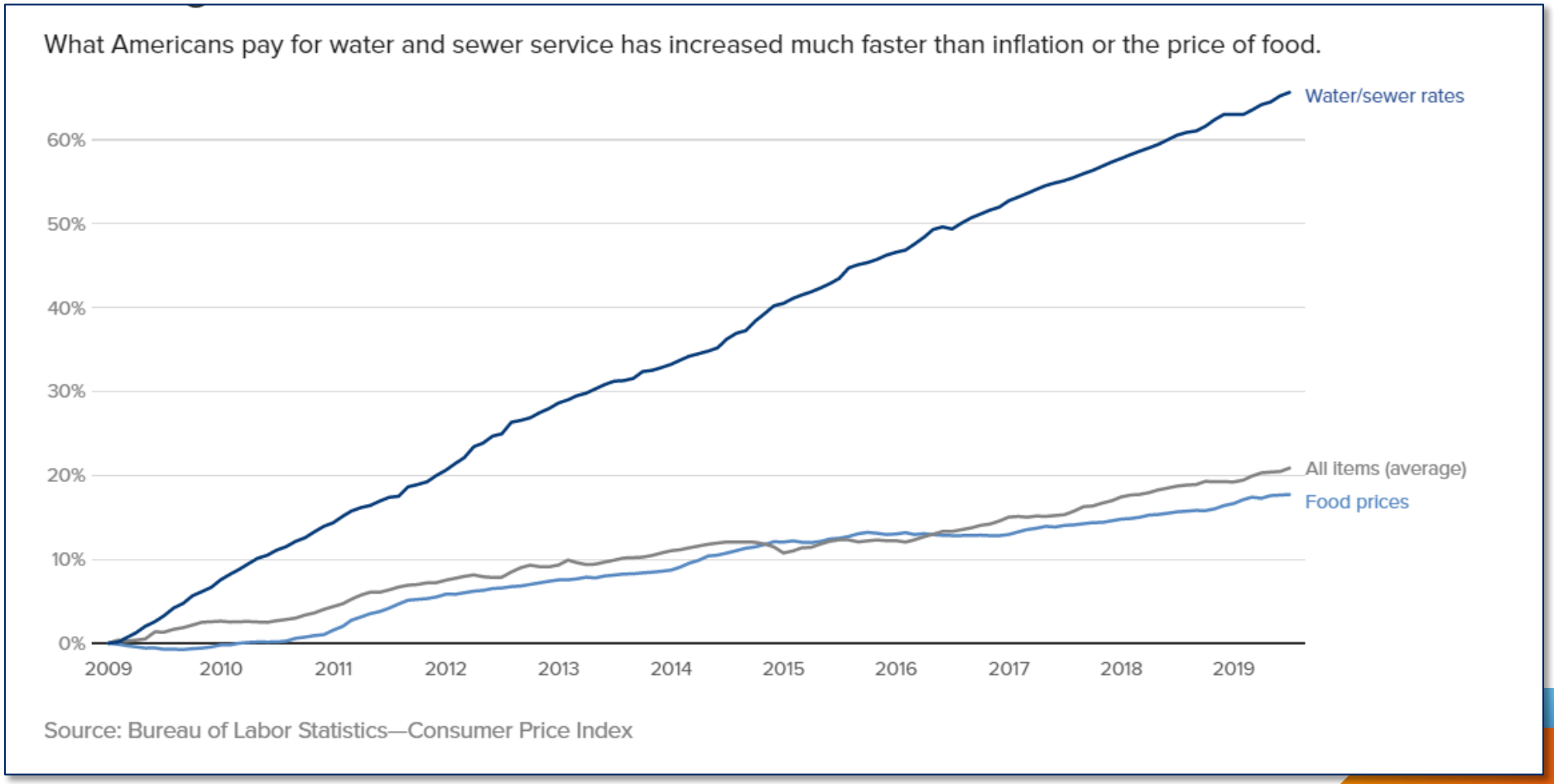
NEWS

Plans for desert subdivisions raising questions about water

Concerns over water supply for future Banning Lewis development

Wed, February 3, 2021, 9:14 PM

Rising Water and Sewer Costs



Water Infrastructure

- Bloomington, Indiana
  - 18% increase for residential
  - 40% for commercial/industrial
- Water mains 75+ years old
- Plan would replace all water mains every 100 years
- Brookfield, Illinois
  - Proposed 18% increase

City Raising Water Rates To Help Replace Aging Water Lines

By PATRICK BEANE
Posted March 25, 2021

Like One person likes this. Be the first of your friends. Tweet

LOCAL GOVERNMENT

Brookfield officials mull water main replacement program

Rate hike proposed to replace pipes that are 100+ years old

by BOB UPHUES March 23, 2021

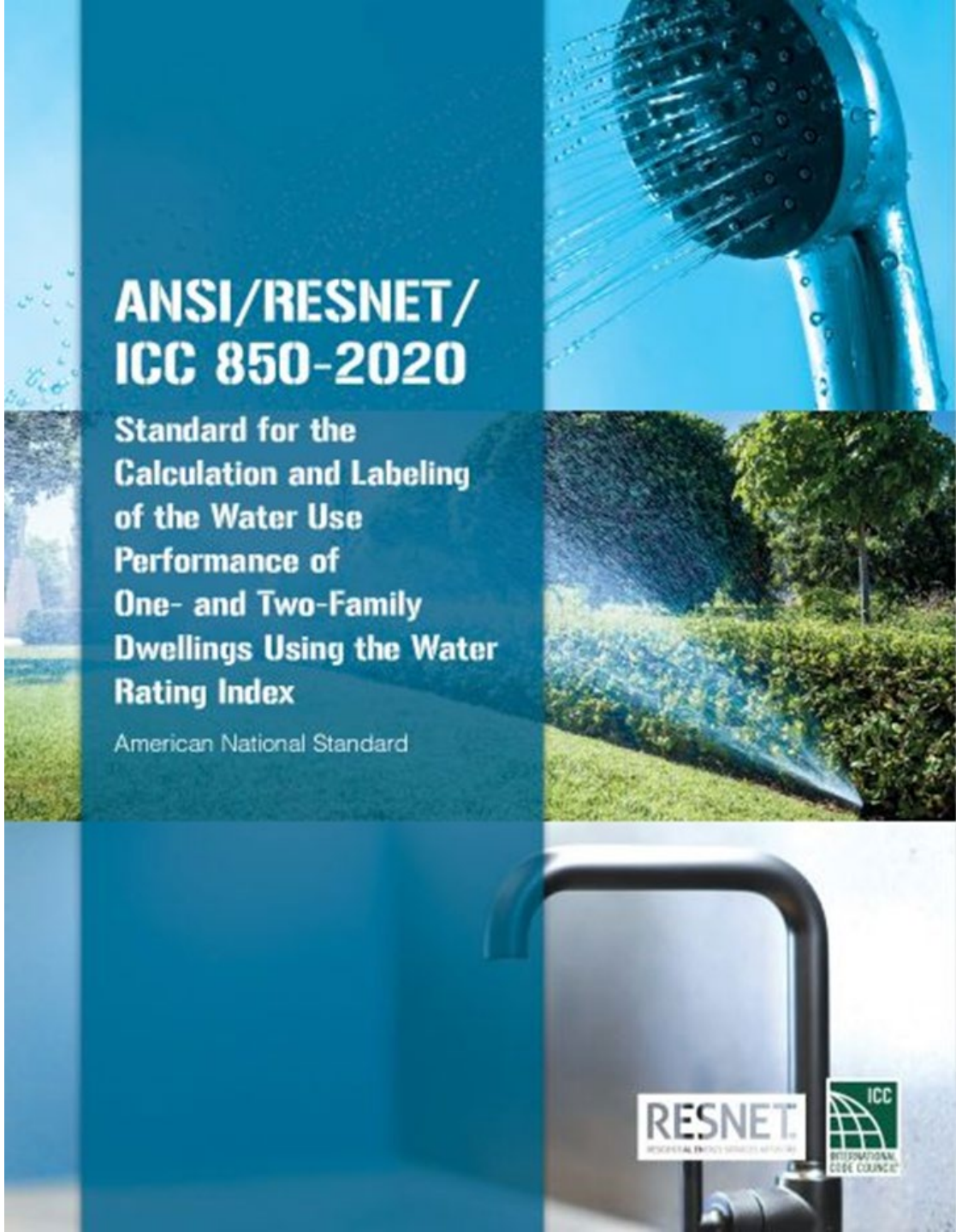
THE HILL

Four Great Lakes governors call on White House to aid in water infrastructure upgrades

BY ZACK BUDRYK - 03/30/21 02:29 PM EDT 30 COMMENTS

Standard 850-2020

- Basis for the calculation of $HERS_{H2O}$ Index Score
- Requirements for labeling
- Calculations for water cost savings
- Only applies to single family and duplexes, including townhomes
- Work has begun on version 2



Components of a Water Rating

Shower Heads

Kitchen Faucet

Lavatory Faucets

Clothes Washer

Toilet Flush Volume

Water Softener

Leaks/Other Water Use

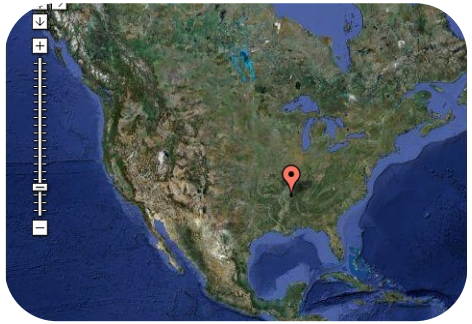
Excess Pressure

Irrigation

Pool or Spa

Components of a Water Rating

House Size



Geographic Location

Number of Bedrooms

Lot & Landscape Size

Hot Water Distribution Layout

Hot Water Pipe Insulation

How does WaterSense fit in?

- RESNET is a WaterSense HCO
- $HERS_{H2O}$ is a WS Approved Cert. Method
- Achieve H2O Score of 70 or less
- Few basic requirements
- WS Verifiers to be listed on EPA website
- https://lookforwatersense.epa.gov/home-verifier.html

Technical Requirements for V2

- Meet all items on the mandatory checklist
- $HERS_{H2O}$ score of 70 or less
- Submit rating to RESNET to obtain H2O Cert. and WS Labels

Item	Requirements
Leaks	Pressure-loss test on all water supplies detected no leaks
	Free of visible leaks from hot water delivery system
	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
	Free of visible leaks from bathroom faucet(s)
	Free of visible leaks from showerhead(s)
	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
	Free of visible leaks from kitchen and other sink faucet(s)
	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
Toilets	WaterSense labeled
Bathroom sink faucets	WaterSense labeled
Showerheads	WaterSense labeled

What about WaterSense Version 1?

- February 2021, Final V2 Released
- Feb – June 2021, Transition Phase 1
  - Homes can use V1 or V2
- July – December 2021 Phase 2
  - Homes permitted after July 1 use V2
- January 2022, Final Sunset on V1

Image Courtesy KB Home

Verifier Promo Materials

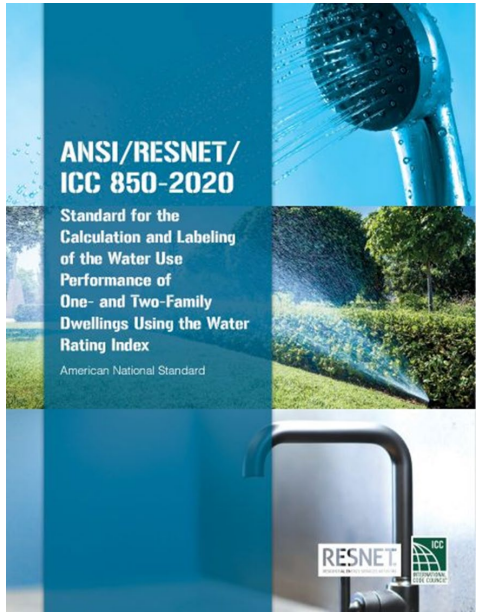
- WaterSense Developed Materials:
  - Customizable Brochure
  - Email template
  - Website Text
  - Social Media Graphics

How do I get started?

- Program Implementation Guidelines
- QA Providers
- HERS Raters and RFIs
- Builders
- Water Utilities

Program Implementation

- Implementation "Guidelines" will eventually become part of MINHERS
- Guidelines Include:
  - QA Provider Accreditation/responsibilities
  - Rater/RFI Certification
  - QA Requirements
  - Submitting Ratings



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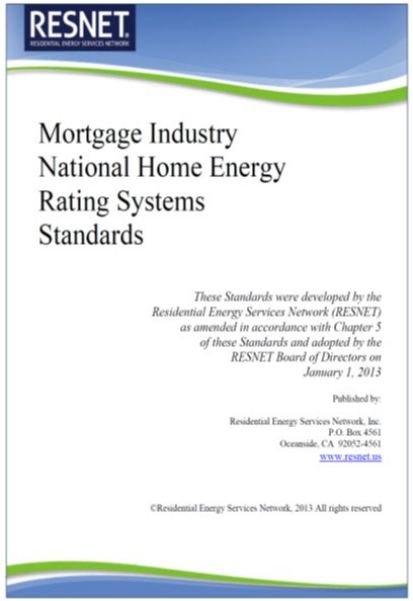

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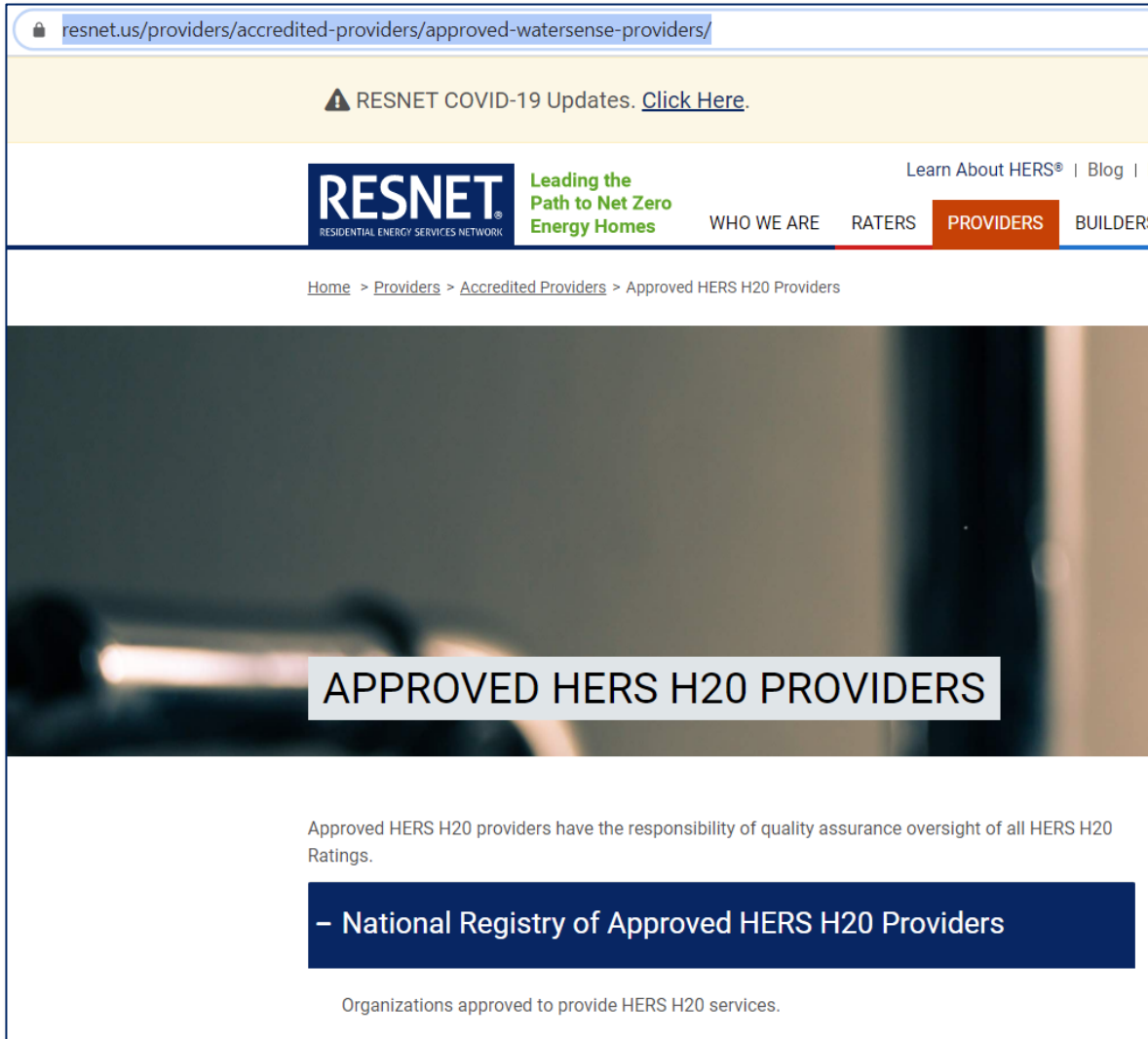
RESNET HERS H20

Provider Accreditation

- Application on RESNET Website
- Accreditation required to offer QA on H2O Ratings and WaterSense Labeled Homes
- 19 Accredited Providers
- Find a Provider: https://www.resnet.us/providers/accredited-providers/approved-watersense-providers/



HERS Raters and RFIs

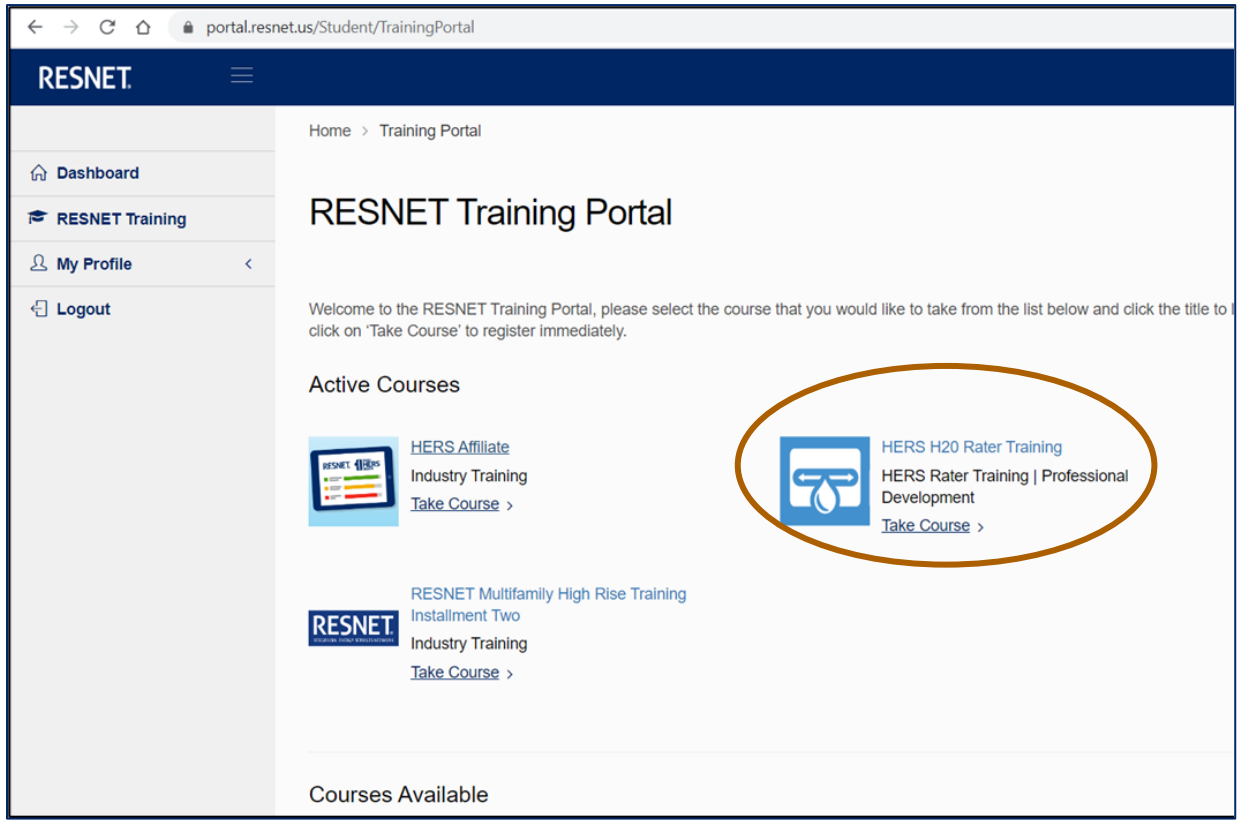
- Must have QA Provider
- Take online H2O training
- Watch WaterSense V2 video
- Review calculation spreadsheet

What about California?

- CA HERS Raters can also participate
- CHEERS and CalCerts are accredited H2O Providers
- Must take training
- Final guidelines for CA in a week or two

HERS$_{H2O}$ Online Rater Training

- Portal.resnet.us
- 2-3 hours
- $75
- 170+ certified
- Raters and RFIs should take it
- Required to do H2O Ratings and WaterSense



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The Process for a $HERS_{H2O}$ Rating

Begin Calculation Spreadsheet Based on Builder Specs.

Conduct Final Inspection During Final HERS Inspection

Finalize Calculation Spreadsheet

Submit Spreadsheet to Provider for Upload to RESNET Registry

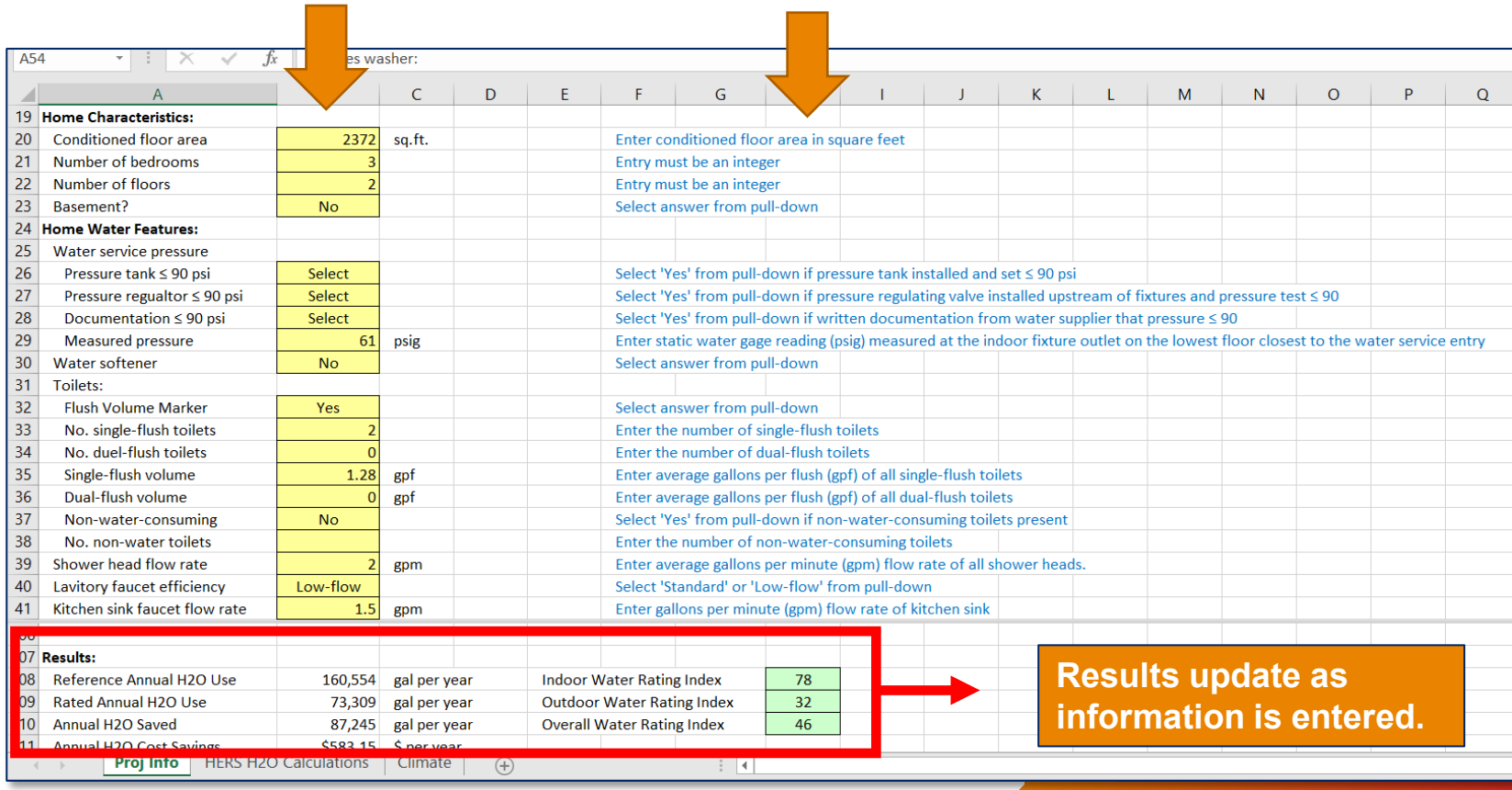
H2O Rating Cert. is Automatically Emailed to Address in Spreadsheet

Calculation Spreadsheet

- All project info in one tab
- Climate data by zip code
- Can be uploaded to RESNET Registry as XML file
- Can produce XML output of project data
- Eventual transition to software

All User Input Cells are Yellow

Instructions in blue.



	A	B	C	D	E	F	G
19	**Home Characteristics:**						
20	Conditioned floor area	2372	sq.ft.			Enter conditioned floor area in square feet	
21	Number of bedrooms	3				Entry must be an integer	
22	Number of floors	2				Entry must be an integer	
23	Basement?	No				Select answer from pull-down	
24	**Home Water Features:**						
25	Water service pressure						
26	Pressure tank ≤ 90 psi	Select				Select 'Yes' from pull-down if pressure tank installed and set ≤ 90 psi	
27	Pressure regualtor ≤ 90 psi	Select				Select 'Yes' from pull-down if pressure regulating valve installed upstream of fixtures and pressure test ≤ 90	
28	Documentation ≤ 90 psi	Select				Select 'Yes' from pull-down if written documentation from water supplier that pressure ≤ 90	
29	Measured pressure	61	psig			Enter static water gage reading (psig) measured at the indoor fixture outlet on the lowest floor closest to the water service entry	
30	Water softener	No				Select answer from pull-down	
31	Toilets:						
32	Flush Volume Marker	Yes				Select answer from pull-down	
33	No. single-flush toilets	2				Enter the number of single-flush toilets	
34	No. duel-flush toilets	0				Enter the number of dual-flush toilets	
35	Single-flush volume	1.28	gpf			Enter average gallons per flush (gpf) of all single-flush toilets	
36	Dual-flush volume	0	gpf			Enter average gallons per flush (gpf) of all dual-flush toilets	
37	Non-water-consuming	No				Select 'Yes' from pull-down if non-water-consuming toilets present	
38	No. non-water toilets					Enter the number of non-water-consuming toilets	
39	Shower head flow rate	2	gpm			Enter average gallons per minute (gpm) flow rate of all shower heads.	
40	Lavitory faucet efficiency	Low-flow				Select 'Standard' or 'Low-flow' from pull-down	
41	Kitchen sink faucet flow rate	1.5	gpm			Enter gallons per minute (gpm) flow rate of kitchen sink	
07	**Results:**						
08	Reference Annual H2O Use	160,554	gal per year		Indoor Water Rating Index	78	
09	Rated Annual H2O Use	73,309	gal per year		Outdoor Water Rating Index	32	
10	Annual H2O Saved	87,245	gal per year		Overall Water Rating Index	46	
11	Annual H2O Cost Savings	$583.15	$ per year				

Proj Info | HERS H2O Calculations | Climate

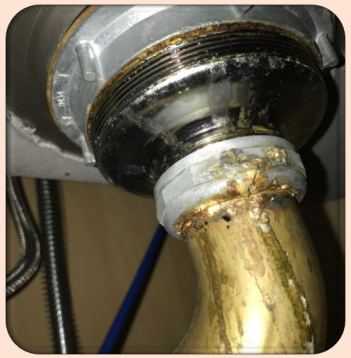
Results update as information is entered.

Achieving the WaterSense Label

- Verify Builder is a WS Partner
- Achieve H2O Score of 70 or less
- Complete the checklist at the bottom of the H2O Calc. Spreadsheet

100	**Water Sense Mandatory Requirements**	
101	WS_Pressure_loss_tests	No
102	WS_Leak_free_hot_water	No
103	WS_Leak_free_toilets	No
104	WS_Leak_free_bathroom_faucets	No
105	WS_Leak_free_showerheads	No
106	WS_Leak_free_bathroom_tubs	No
107	WS_Leak_free_kitchen_faucets	No
108	WS_Leak_free_other_fixtures	No
109	WS_Toilets_labeled	No
110	WS_Bathroom_sink_faucets_labeled	No
111	WS_Showerheads_labeled	No
112		

Indoor Inspection/Testing



Always check for leaks

Static Pressure Test

Fixture flow rates

Toilet Flush volume

Appliance Information

Using Outdoor Faucet for Static Pressure Test

- Covered in the online H2O training
- Plenty of Youtube videos if you're not familiar with it.
- Needed for the WS-required pressure loss test
- Four options for calc. spreadsheet

30	**Home Water Features**			
31	Water service pressure			
32	Pressure_tank_psi_limit	No		
33	Pressure_regulator_psi_limit	No		
34	Documentation_psi	No		
35	Measured_pressure	75	psig	(m

Toilets/Faucets/Showerheads

- Toilets
  - Avg. flush volume of all toilets
  - Single/Dual Flush
  - Non-water consuming toilets
- Faucets/Showerheads
  - Flow rate printed on fixture or in manufacturer specs OR
  - Flow rate test
  - Bathroom faucets are either ‘Standard’ or ‘Low Flow’ in spreadsheet (Low Flow = 1.5 gpm or less)

37	Toilets:		
38	Flush_Volume_Marker	No	
39	No_single-flush_toilets	1	
40	No_dual-flush_toilets	0	
41	Single-flush_volume	1.60	gpf
42	Dual-flush_volume	0.00	gpf
43	Non-water-consuming	No	
44	No_non-water_toilets	0	
45	Shower_head_flow_rate	2.50	gpm
46	Lavitory_faucet_efficiency	Standard	
47	Kitchen_sink_faucet_flow_rate	2.20	gpm

Clothes Washers

60	Clothes washer:			
61	CW_Make	XYZmake		per specificaitons
62	CW_Model	X88model		per specificaitons
63	CW_Capacity	3.0	cu.ft	
64	CW_Integrated_Water_Factor	11.4		from CCMS database
65	OR add following data to disaggregate hot and cold water use			
66	CW_IMEF	1.00		from CCMS database
67	CW_Label_Energy_Rating	400	kWh/y	(from label)
68	CW_Electric_Hot_Water_Cost	$48	$/y	(from label)
69	CW_Gas_Hot_Water_Costs	$27	$/y	(from label)
70	CW_Electric_price	$0.12	$/kWh	(from label)
71	CW_Gas_price	$1.09	$/therm	(from label)
72	CW_Wash_loads_per_week	6		(integer from label)

- Be sure to record:
  - Make
  - Model Number
  - Capacity in Cubic Feet
  - Integrated Water Factor
- DOE's Compliance Cert. Database is a great resource: https://www.regulations.doe.gov/certification-data/products.html#q=Product_Group_s%3A*.

Dishwashers

- Be sure to record:
  - Make
  - Model Number
  - Capacity (Std. or Compact)
  - Gallons per cycle

OR

- Use Energy Label data to determine

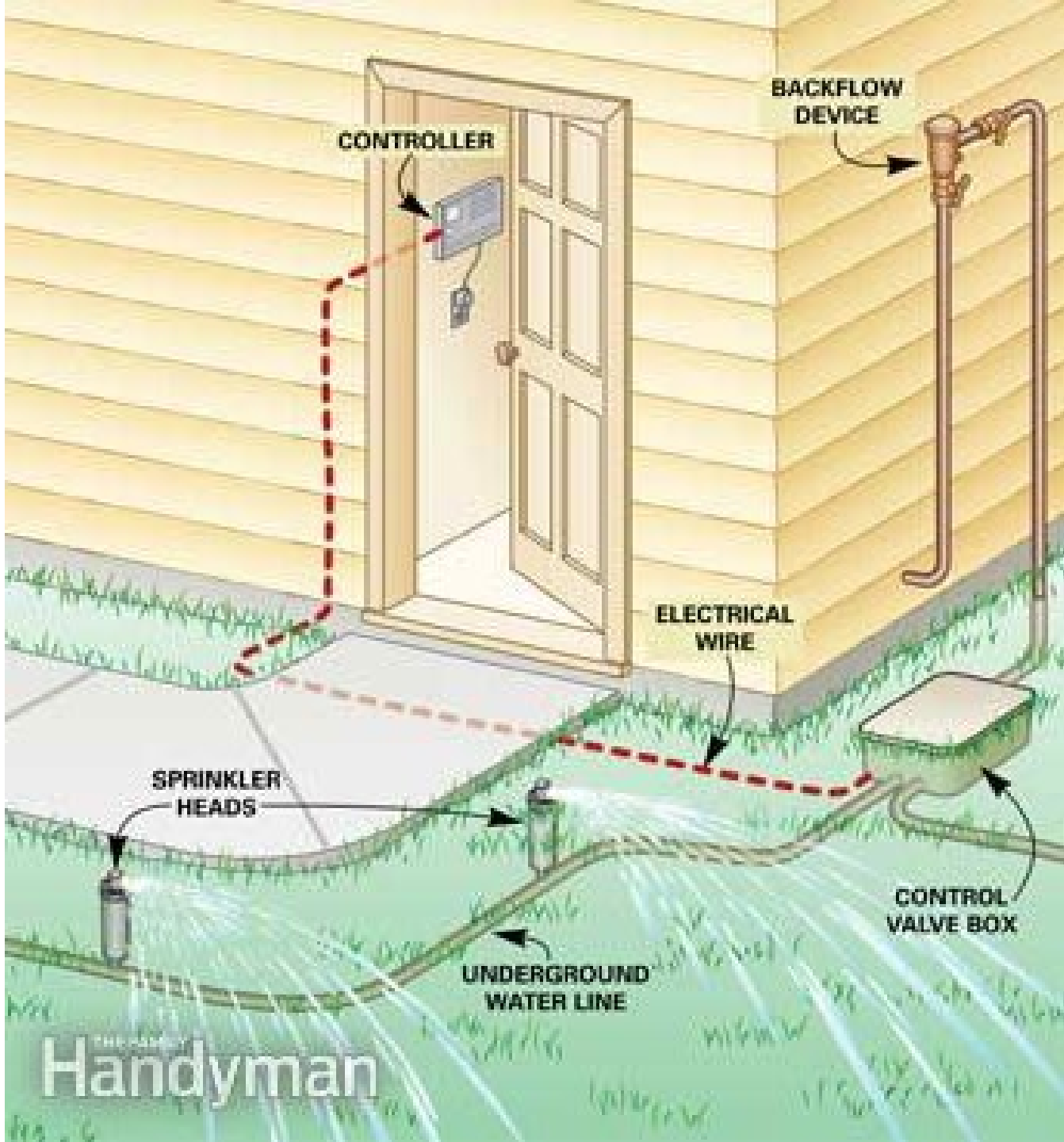
48	Dishwasher				
49	DW_Make	WPCmake			
50	DW_Model	WTDmodel			
51	DW_Capacity	Standard			
52	DW_Gallons_per_cycle	4.00		Takes precidence if er	
53	OR use label data to determine gal/cycle				
54	DW_Label_Energy_Rating		kWh/y	(from label)	
55	DW_Electric_Hot_Water_Cost		$/y	(from label)	
56	DW_Gas_Hot_Water_Costs		$/y	(from label)	
57	DW_Electric_price		$/kWh	(from label)	
58	DW_Gas_price		$/therm	(from label)	
59	DW_Wash_loads_per_week			(integer from label)	

Outdoor Inspection/Testing

Landscape Design	Irrigation Controller	Swimming Pool/Spa?	Irrigation Flow Rate?
Irrigated Area			*Optional

Outdoor Irrigation Basics

- Controller
  - Auto or Manual?
  - Smart controller?
- Emitters/Heads
  - Drip, pop-up, rotating
- Backflow Device
- Control Box
  - Valves for each zone, run by controller



Lot and Irrigated Area

- Use site plan or measure on-site
- Front area = entire "front yard"
- Irrigation area = only those parts of the yard receiving irrigation
- Pool/spa; controller; prof. audit
- RICI = Residential Irrigation Capacity Index

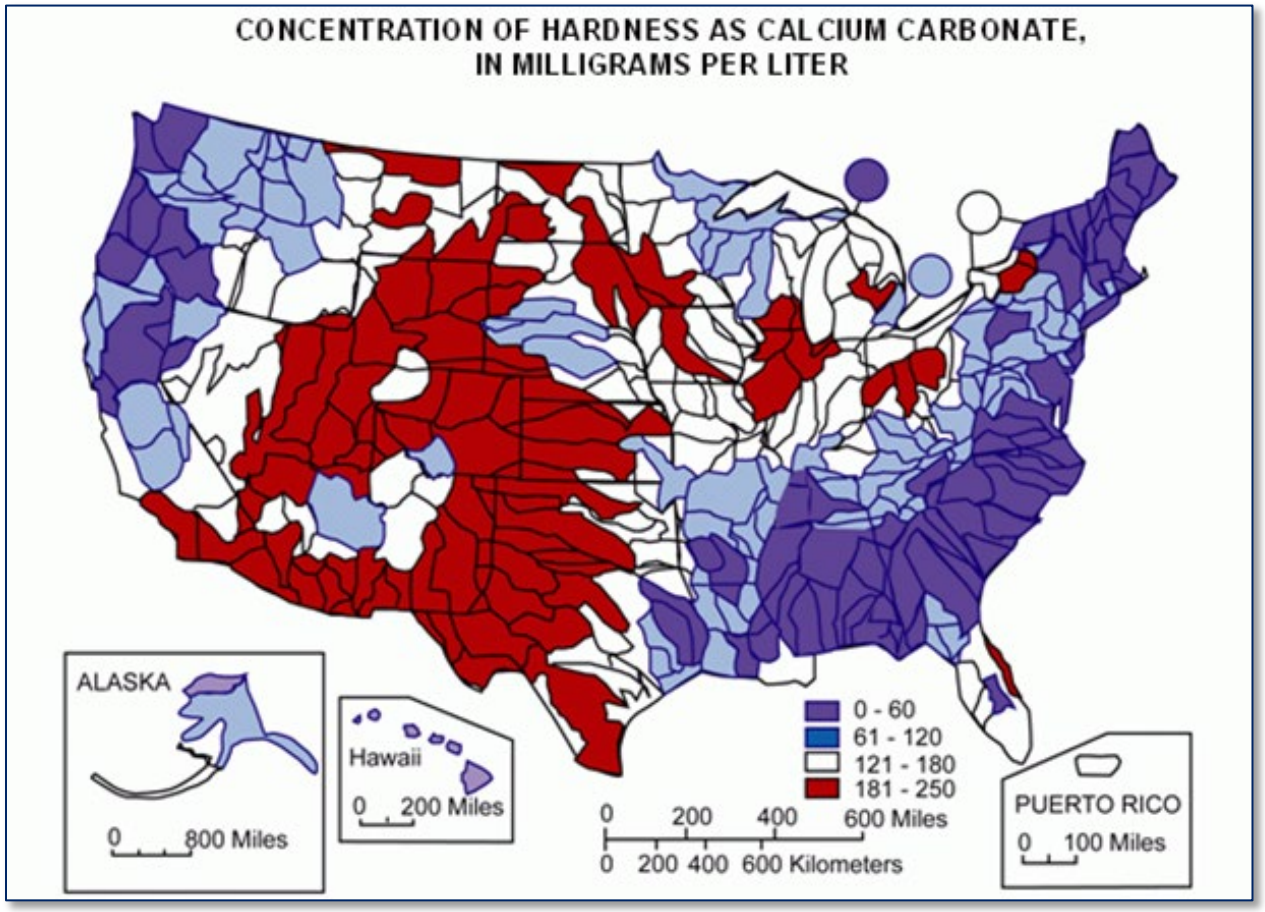
81	**Landscape Design**		
82	Lot_Area	10,000	sq.ft.
83	Pad_footprint_area	1,400	sq.ft.
85	Front_area	5,000	sq.ft.
87	Is_Back_area_improved	Yes	
88	Front_irrigation_area	3,000	sq.ft.
89	Back_irrigation_area	2,770	sq.ft.
90	Total_irrigation_area	5,770	sq.ft.
91	**Outdoor Water Features**		
92	Pool_or_spa	No	
93	Irrigation_System	Yes	
94	Profession_Irr_audit	No	
95	Irr_Weather_Control	No	
96	Use_RICI	No	
97	RICI_zone_flow_rates	15.0	

What is RICI?

- An index within an index
- Estimate irrigation system water usage without knowledge of plantings
- Requires a test of irrigation flow rate
- Flow rate in GPM is entered into spreadsheet

Is HERS$_{H2O}$ climate specific?

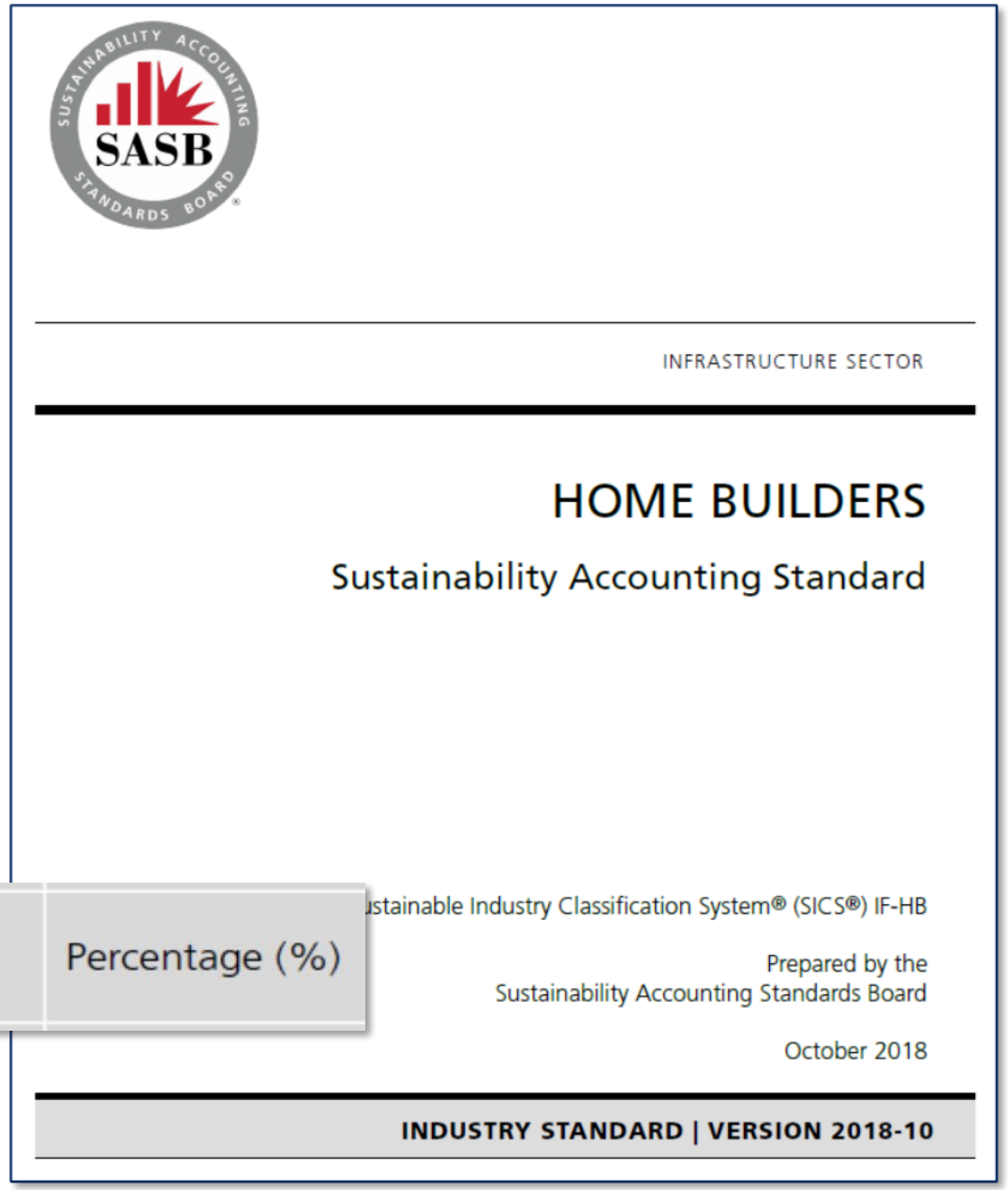
- Net ET for Landscape Irrigation
  - Water and Climate Atlas Data
  - Processed at zip code level
- Mains Water Temperature
  - Impacts hot water wasted
  - Based on average daily temp at TMY weather station
- Hardness of Water
  - Based on USGS hardness data
  - Processed at the zip code level



Builders

- Contact your HERS Rater to get started
- Use H2O Rating data for environmental reporting
  - SASB standard has metric for number of WaterSense Fixtures installed

Percentage of installed water fixtures certified to WaterSense® specifications	Quantitative	Percentage (%)



INFRASTRUCTURE SECTOR

HOME BUILDERS

Sustainability Accounting Standard

ustainable Industry Classification System® (SICS®) IF-HB

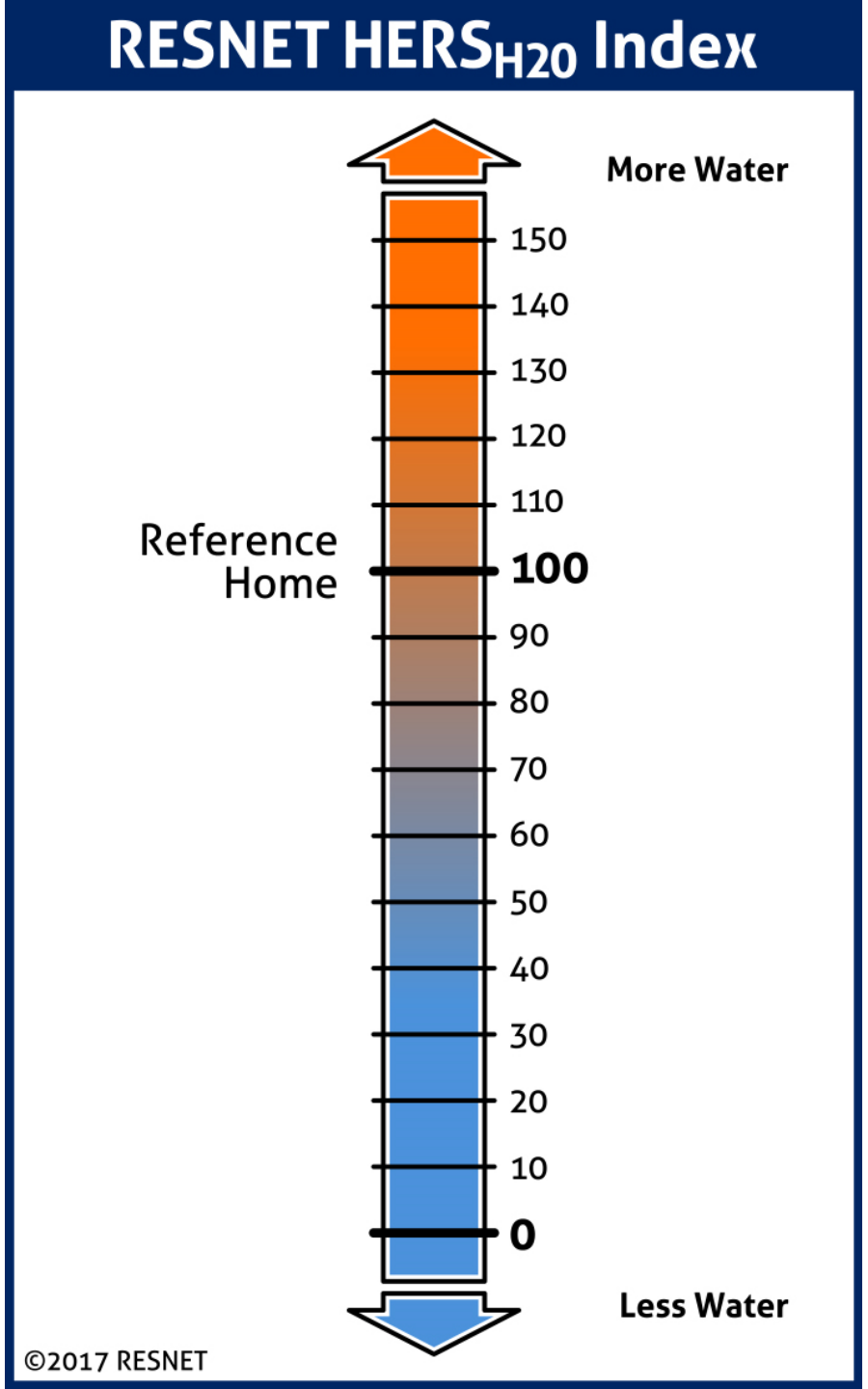
Prepared by the
Sustainability Accounting Standards Board

October 2018

INDUSTRY STANDARD | VERSION 2018-10

Water Utilities

- Use HERS$_{H2O}$ as a water efficiency program
  - Calculator gives consumption estimates
  - Set target scores for incentives
- Based on national standard
  - ANSI/RESNET/ICC 850-2020



THANK YOU!

Reach out with questions:

Ryan@resnet.us