# This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





### **SNWA Water Smart Home Program**

- Developed in 2004 in partnership with the Southern NV Home Builders' Association
- Encouraged adoption of high-efficiency appliances, plumbing fixtures and landscape designs in new, single-family residential construction
- Estimated (engineered savings) to save 75,000 gallons per year compared to a pre-1994 home and 10,000 gallons compared to other contemporary homes
- One of the first programs of its kind to certify water-efficient homes on a mass scale
- In 2017, SNWA switched from a Pass/Fail (inspection process) to a Point Based (inspection process) and reimbursed builders for Passed homes. 10% Inspected and reimbursed \$500 per passed home.



# **SNWA Water Smart Home Program**



- Roughly 17,000 homes built under the WSH program between 2005 and 2020
- Consumption analysis of completed homes in 2009 (after normalizing lot sizes)

Group	Annual Consumption (Gallons)
Water Smart Homes (WSH)	93839
2000-2003 Construction	128941
Same Construction Years as WSH	97137

- NV Assembly Bill 163 all new construction after Jan 1, 2020, must adopt EPA WaterSense fixtures
- Due to AB163 and budget impacts due to the Pandemic, SNWA determined to sunset the WSH program
- June 1, 2020, WSH was terminated
- SNWA's partnership and work with EPA and KB homes helped facilitate the WaterSense V2.0 Pilot





#### Sunset of WaterSmart Homes & WaterSense V 2.0 Pilot

- The decision to sunset WaterSmart homes was made in the Spring of 2020
- WaterSense sought the chance to validate the approach to V2 of WaterSense labeled homes
- Released the V2 pilot in June 2020
  - Allowed homes to earn the WaterSense label based on the V2 draft with a  $HERS_{h2o}$  score of 70 or less
- EPA released the V2 final in February 2021
  - XXX homes certified under the pilot
  - XXX homes certified in Las Vegas since the final release







under V2 by KB Home



#### How Much Water Do WaterSense Labeled Homes Save?

- XXX (xxx from the pilot, and xxx from V2) labeled homes were built/labeled in the second half of 2020 and the first half of 2021
- Data comes from two principal sources
  - EPA receives information on all rated homes from the Home Certification Organization (HCO)
  - Public requests made to the utilities serving these communities (City of Henderson, City of North Las Vegas, and the Las Vegas Valley Water District) for metered water use data
- Metered data was processed to estimate annual consumption
  - Limited to homes with a minimum of 9 months of water use data with similar months serving as estimates for missing ones (i.e. July might be doubled if June was missing)

lookfor

• At present, this results in a dataset of 51 homes with following characteristics

**Summary of Data** 

	Average	Range
Rating	57	47 to 64
		1,157 to
Conditioned Area (ft <sup>2</sup> )	2,054	3,430
Number of Bedrooms	4	2 to 5
		1,725 to
Lot Area (ft <sup>2</sup> )	4,256	8,166
Estimated Occupants	3.12	2.17 to 3.79

# look for

#### **Indoor Features**

Feature	Average	Range		
Toilets	1.28 gpf, WS labeled	N/A*		
Showerheads	1.7 gpm, WS labeled	1.3-1.75 gpm, WS labeled		
Lav faucets	1.22 gpm, WS	1.2-1.5 gpm, WS		
	labeled	labeled		
Kitchen Faucets	1.41 gpm	1-1.5 gpm		
Dishwashers	3.3 gal/cycle	N/A*		
Clotheswasher	4.3 IWF	N/A*		
Hot Water Piping	60 feet, insulated	40-90 feet, insulated		
Length				



#### **Outdoor Features**

	Average	Range	
LotArea	4,256	1,725 to 8,166	
Installed landscape	1,210 sq. ft	217-3,194 sq. ft.	
(at delivery)			
Unfinished area	1,293 sq. ft.	1,198-4146 sq. ft.	
available for future			
landscaping			
RICI	1.08	0.51-2.9	

#### Water Use



· Preliminary data indicates that these homes are very efficient





# **Comparing Data From Other Sources**

	Rated	Reference	Observed	USGS 2015 Domestic Withdrawal Data
Average GPCD (gal/person/day)	69	<mark>121</mark>	37	<mark>123</mark>

	Observed	REUWS II	WaterSmart Homes (2008-2009)	SNWA New Homes (2000-2003)	SNWA New Homes (2008- 2009)
Average Use (kgal/year)	41	146	94	129	97

# look for

# Why Might This Data be Misleading?

- The first year (and certainly, this past year) may not be indicative of how people in the home will use water long-term
- Homes are required to have front yard landscapes installed at time of certification, but there is often an unfinished/uninstalled portion of the lot
  - These uninstalled landscapes can persist for years
- Landscape water use can be higher during establishment
- Homes may not be fully occupied right away
- Trends in home building could be obscuring (some of) the impact of programs like WaterSense labeled homes and WaterSmart homes

### Conclusions



- The data is limited and preliminary
- It is encouraging!
  - The homes are saving a substantial amount of water
  - The data is consistent with other sources
- The data indicates that WaterSense labeled homes are saving (at least) as much water as expected
  - We likely need to do more research to discover the true delta between existing homes, comparable new construction, and WaterSense labeled homes
- The HERSh2o model is performing as expected, but may be overestimating consumption





- Grow the data set
  - Longer duration
  - More varied homes
- Establish independent control group
  - Compare water use against new and existing homes of comparable features
- Closer analysis of individual features
  - Which features are having the greatest influence on water savings?
  - Is RICI a good predictor of outdoor water use?
- Disaggregation of indoor/outdoor data