

# This presentation premiered at WaterSmart Innovations

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



# *“SMART”* Controller Pilot Study

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*Aurora Water*



# Question:

- *What are the potential benefits of SMART controllers to Aurora residents under 3 different scenarios?*
  - Scenario 1: Install smart controller, utilize default inputs for precipitation rates by head type, manual input of soil, exposure (sun/shade), walk away.
  - Scenario 2: Install smart controller, program all data based on assessment, provide full controller management for 2 growing seasons.
  - Scenario 3: Install smart controller, program data based on assessment, upgrade all zones to PRS-SAM with Rotator nozzles. Provide full controller management for 2 growing seasons.



# Aurora, Colorado = Semi-arid



# Aurora

- Population – 360,000
- Total Connections – 84,262
- Residential Connections – 77,015
- Storage Capacity – 156K acre feet in 12 reservoirs

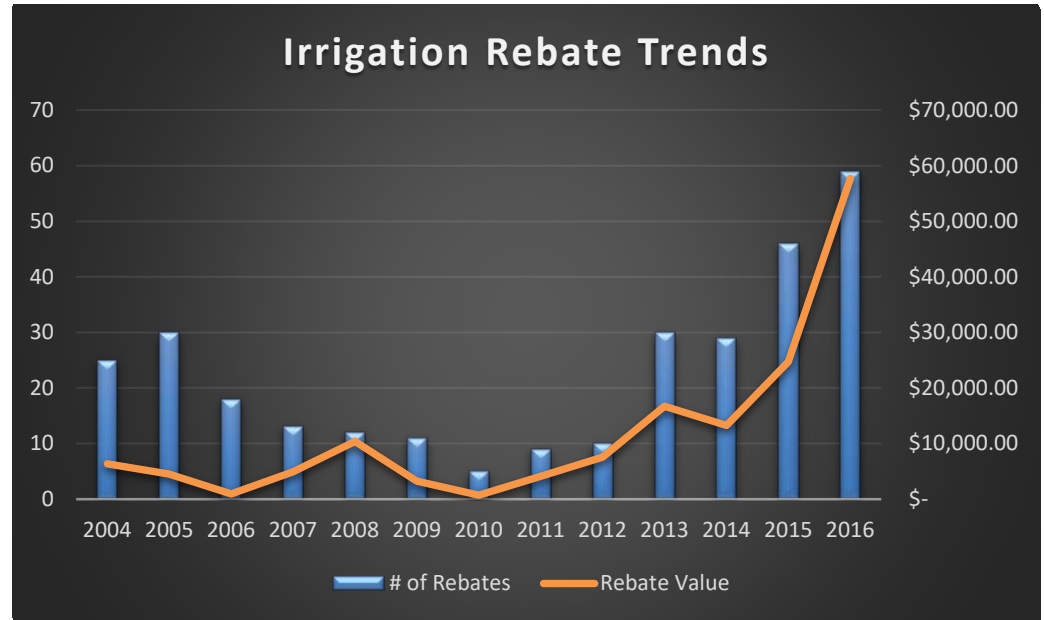


Turquoise Reservoir

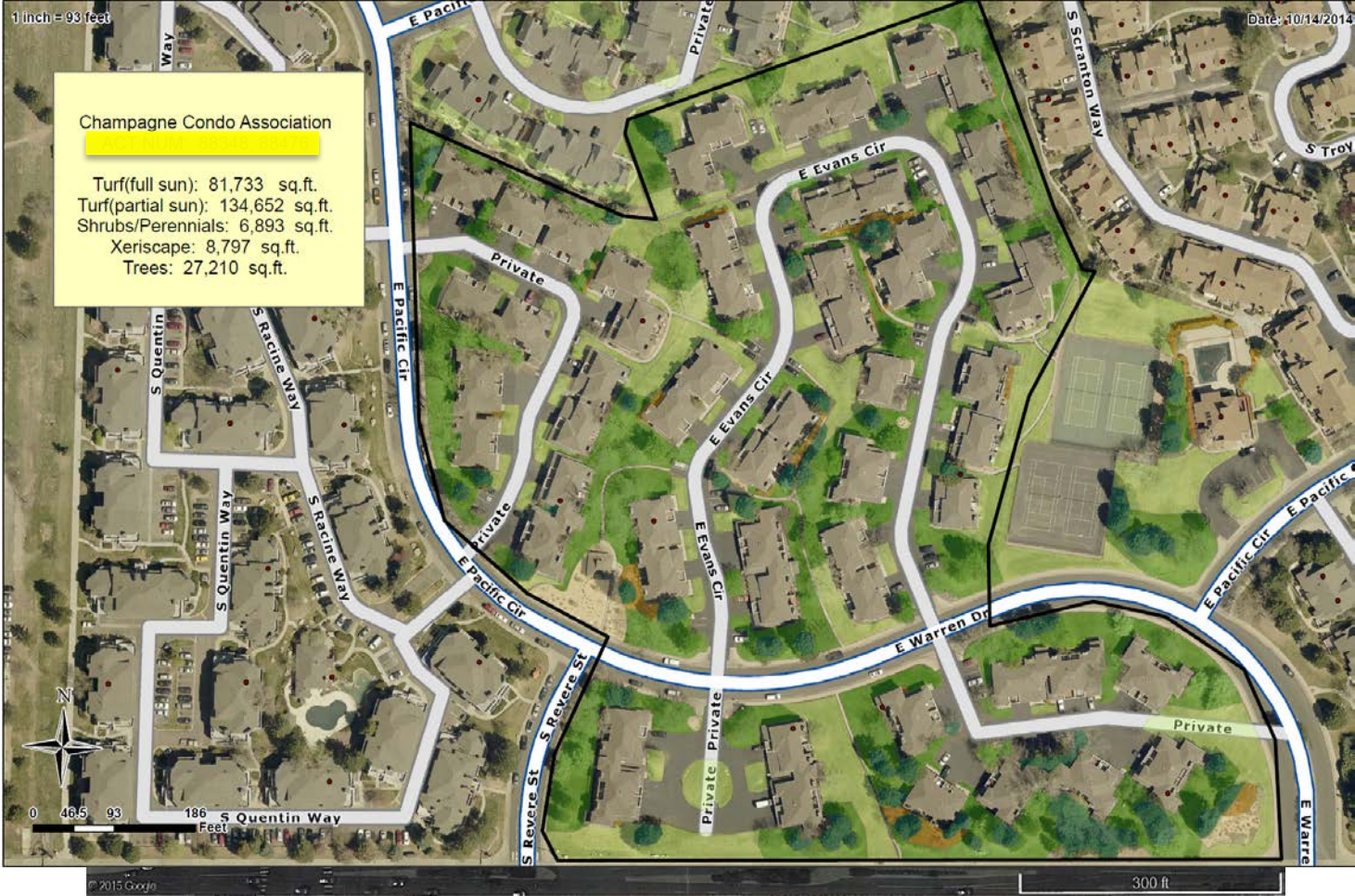




# Efficiency & Rebate History?



# Pilot Parameters





# Pilot Parameters



ET Water 205W 24 Controller



Flow Data



Scenario 1



Scenario 2



Scenario 3





# Analysis Methodology

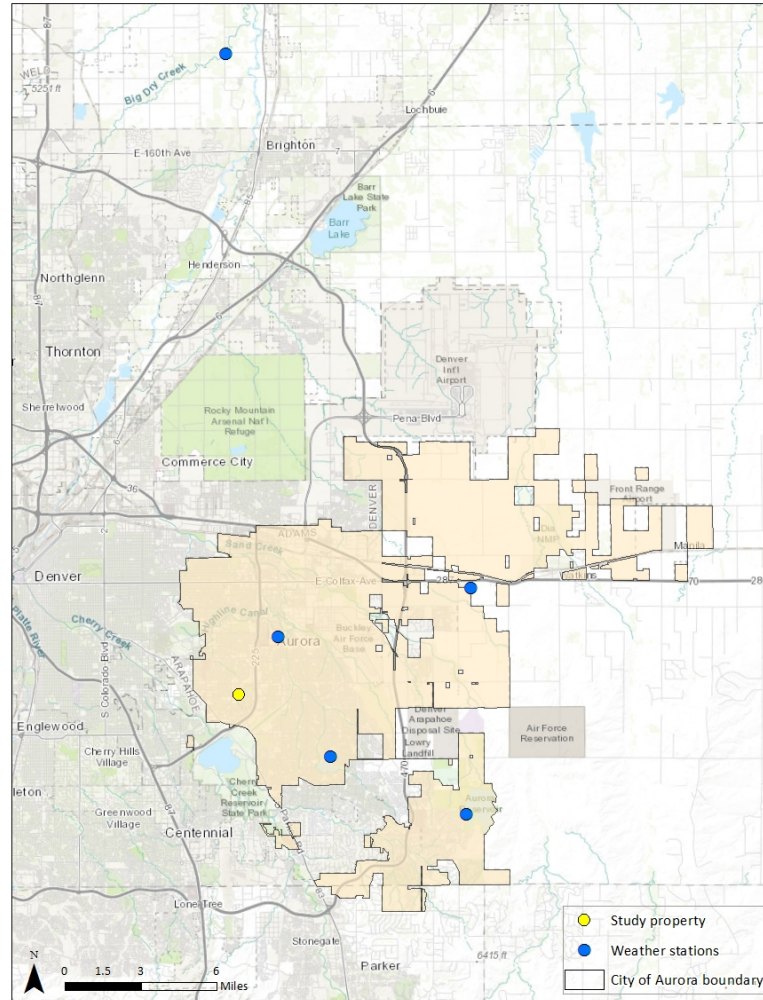
- Recommended Water Use (RWU)
  - Evapotranspiration – Precip = RWU



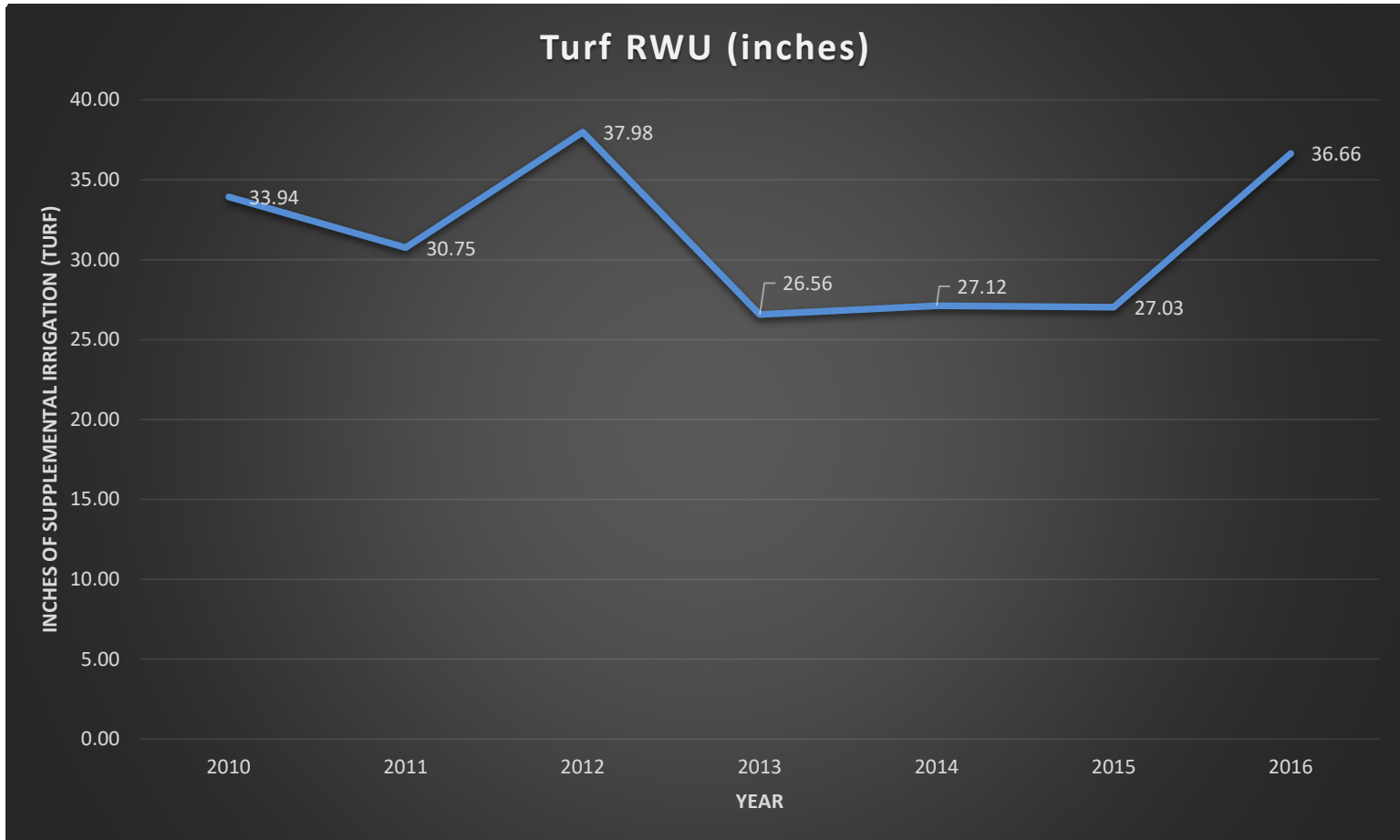
Square Feet of Irrigated Area		216,308		Champagne Condo Association											
Year	2010		2011		2012		2013		2014		2015		2016		
	Actual	RWU	Actual	RWU	Actual	RWU	Actual	RWU	Actual	RWU	Actual	RWU	Actual	RWU	
January	656	548	584	548	564	548	764	548	626	548	678	548	737	548	
February	541	548	483	548	553	548	631	548	502	548	541	548	652	548	
March	531	548	519	548	598	548	608	548	505	548	564	548	662	548	
April	673	701	566	776	647	806	613	631	546	742	847	838	790	778	
May	773	997	1039	717	1023	1112	951	952	917	1020	609	710	858	1003	
June	2169	1252	1999	1177	1840	1403	1378	1126	1324	1340	963	1174	1695	1351	
July	2366	1320	2348	1386	2156	1751	1784	1462	2013	1310	2046	1496	2070	1870	
August	1605	1295	2691	1420	2204	1418	1467	1215	1756	1237	1849	1515	1953	1491	
September	2128	1055	3081	929	1915	805	1390	828	1636	981	1686	1249	1615	1201	
October	1173	752	1340	682	641	683	767	850	838	833	1280	811	1142	955	
November	466	548	533	548	633	548	598	548	493	548	648	548	620	548	
December	508	548	628	548	519	548	646	548	662	548	638	548	615	548	
<b>Totals</b>	WQA	568	548	525	548	582	548	638	548	591	548	627	548	676	548
	Indoor	6678	6570	6414	6570	6874	6570	7688	6570	6880	6570	7419	6570	8018	6570
	Outdoor	6911	3539	9397	3254	6419	4145	3909	3230	4938	3630	4930	3961	5391	4816
	Turf in/sf	51	26	70	24	48	31	29	24	37	27	37	29	40	36
	Tot in/sf	51	26	70	24	48	31	29	24	37	27	37	29	40	36
	<b>Turf</b>	<b>195%</b>		<b>289%</b>		<b>155%</b>		<b>121%</b>		<b>136%</b>		<b>124%</b>		<b>112%</b>	
	<b>Total</b>	<b>195%</b>		<b>289%</b>		<b>155%</b>		<b>121%</b>		<b>136%</b>		<b>124%</b>		<b>112%</b>	



# Analysis Methodology



# Weather Data





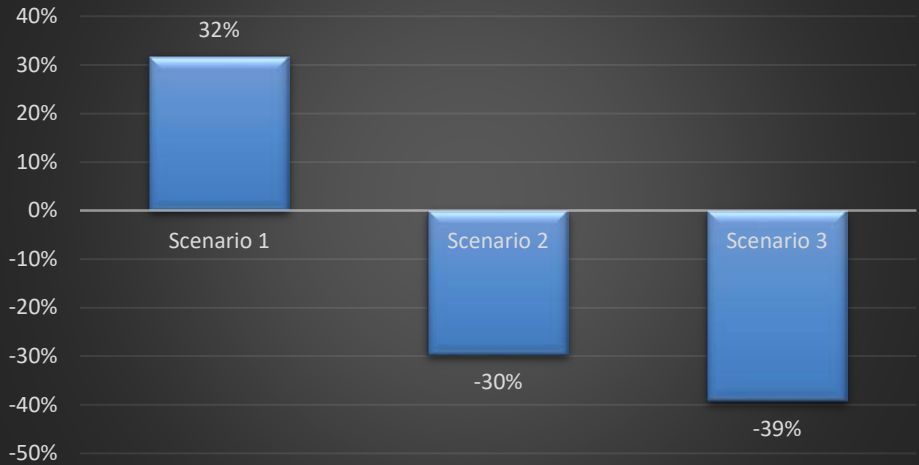
# Pilot Funding

- Total customer costs (includes management fees & labor) before rebate: \$31,578.46
  - Scenario 1: \$3,760
  - Scenario 2: \$3,760
  - Scenario 3: \$24,058.46
- Total Rebate: \$15,599.50
  - 50% of the controller cost after install: \$3,900
  - 50% of the controller cost at end of second growing season: \$3,900
  - 100% of the materials cost for head and nozzle upgrade: \$7,799.50 (Scenario 3 – 15 zones)

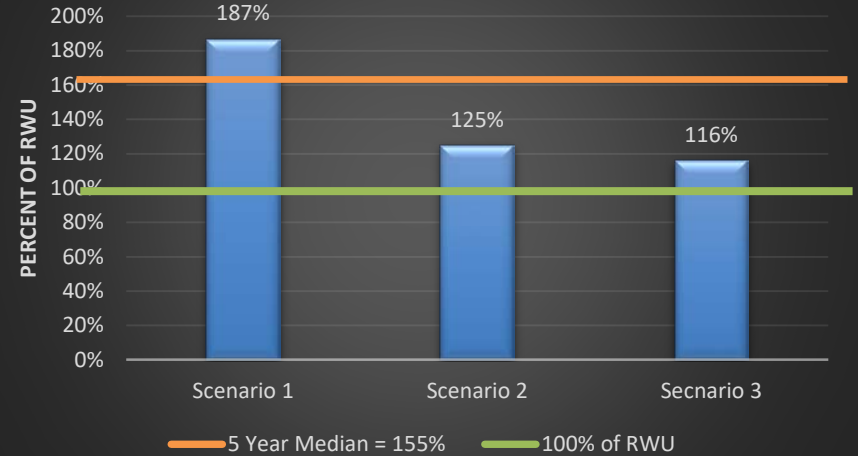


# So, how'd it go?

## 2015 Change in Percent of RWU

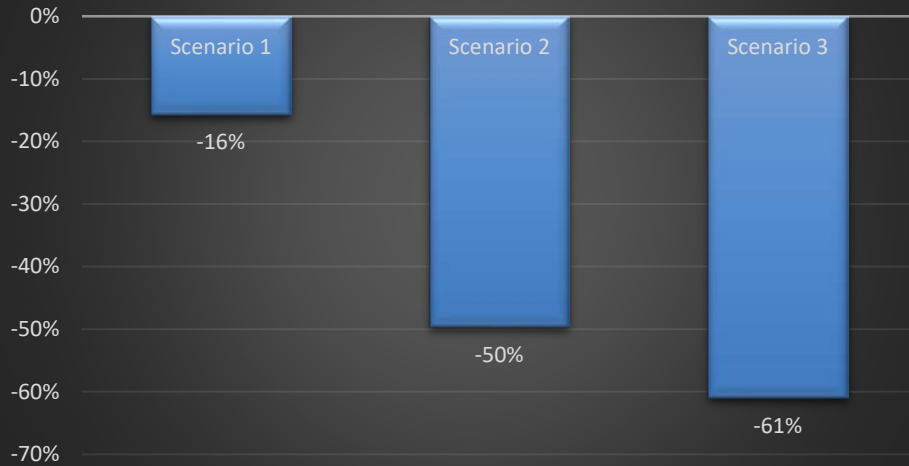


## 2015 Percent of RWU

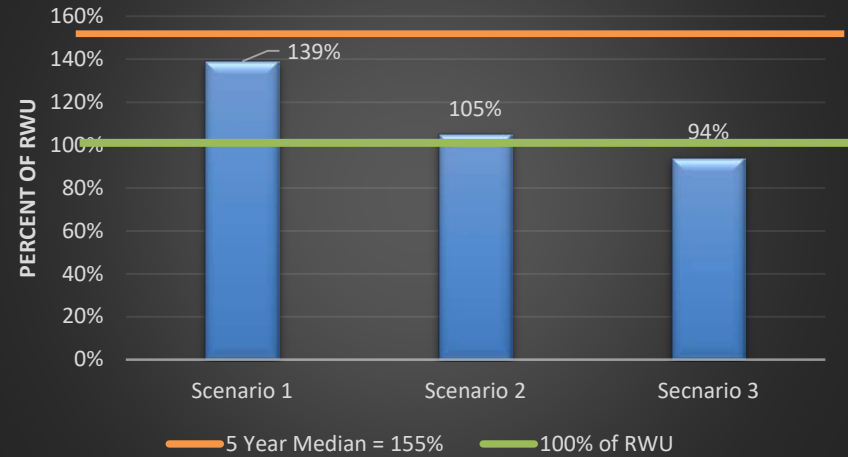


# So, how'd it go?

## 2016 Change in Percent of RWU

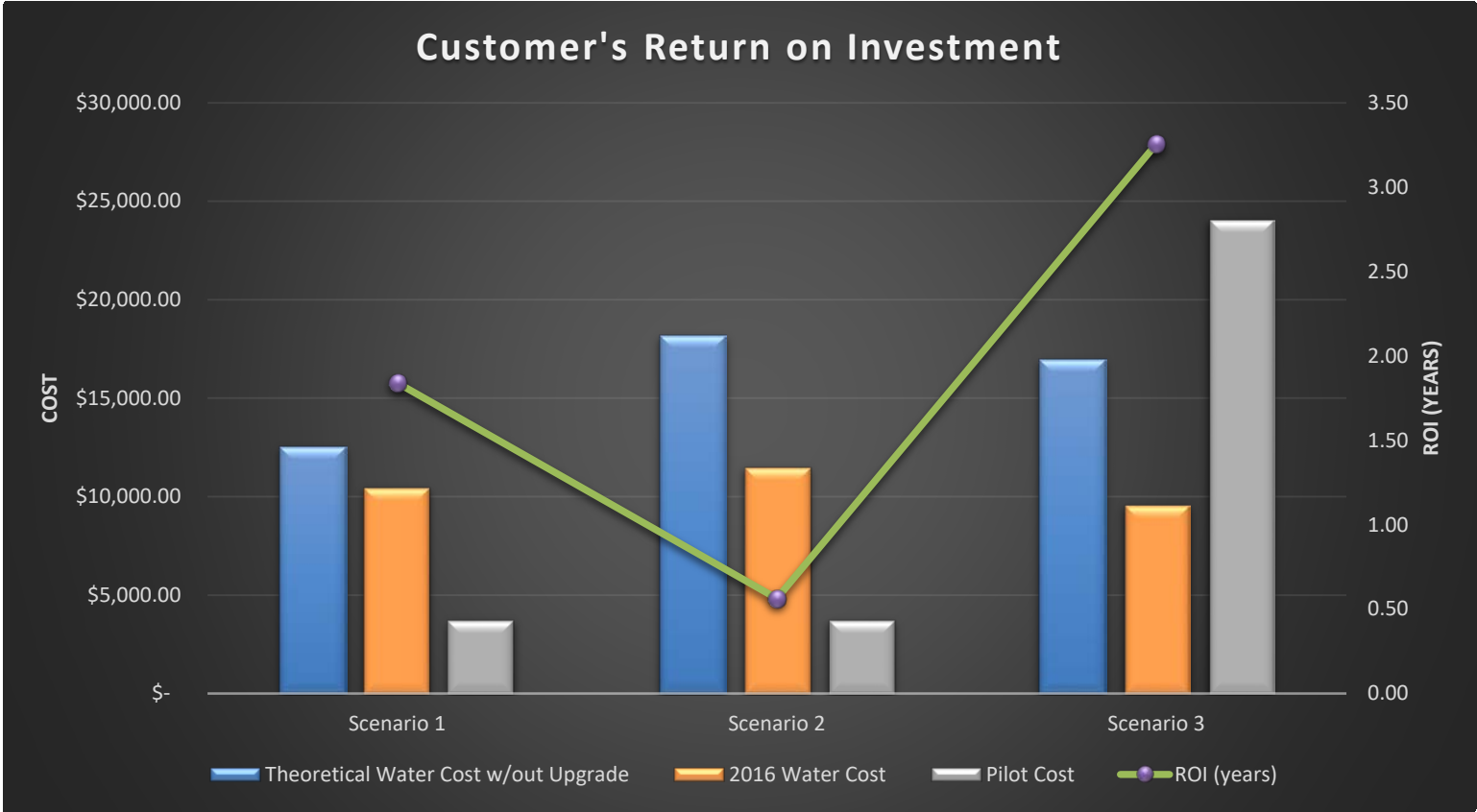


## 2016 Percent of RWU





# Return on Investment



# Program Impact – New Rebate Program

## Residential:

- Up to \$300 max
- 50% at time of install
- 25% after first growing season if metric is met
- 25% after second growing season if metric is met

## Commercial/Large Properties

- Up to \$15K max
- 50% at time of install
- 25% after first growing season if metric is met
- 25% after second growing season if metric is met



# Lessons Learned

- Site selection
- Weather station variability
- Analysis methodology





# Questions?

