



TO: Board of Directors
THRU: Mark Foree, General Manager
FROM: Laine Christman, Resource Economist
DATE: April 6, 2016
SUBJECT: **Presentation on the 2015 Summer Drought Campaign Survey results**

Summary:

- ❖ Survey results indicate TMWA’s water conservation messaging was effectively received by its customers.
- ❖ The majority of surveyed customers conserved water by using it more efficiently (repairing leaks/updating existing irrigation systems, shortening watering times, watering during the cooler part of the day, etc.) versus making permanent changes to their landscaping (removing lawn or replacing lawn with landscaping that requires less water).
- ❖ Customers who did not conserve more water in 2015 reported that the number 1 reason for having difficulty in conserving more water in 2015 was having already completed many conservation actions in the past.
- ❖ Customers reported that most of the water conservation information they received in the summer of 2015 was from TMWA (via direct mail) and that TMWA’s website provided the most useful water conservation information.
- ❖ Importantly, customers anticipate continuing their water conservation practices *regardless* of future water supply conditions (i.e. drought situation).
- ❖ TMWA will continue to work collaboratively with UNR and various stakeholders to analyze the survey results in-depth and adjust its water conservation messaging accordingly.

Discussion:

Survey design and who was surveyed.

To determine how customers responded to TMWA’s request to reduce water use by at least 10% during the summer of 2015, TMWA collaborated with UNR to design and implement an online survey. TMWA and UNR designed the survey to measure the effectiveness of TMWA’s water conservation messaging and learn how customers responded to that messaging. To be included in the survey, the customer must:

- (1) have maintained the same single family metered service between 2013 and 2015;
- (2) have usage that exceeded tier 1 (6,000 gallons) during the irrigation months; and
- (3) have a valid email address on file with TMWA.

UNR sent the survey request by email to 20,293 single-family customers in December 2015. TMWA received 2,544 completed or partially completed surveys from which the following key management goals were investigated. This response rate is consistent with typical response rates found in the survey implementation literature and is acceptable for analytic review of average residential behavior. A copy of this survey and a distribution of the responses to each question can be found in the Appendix to this report.

TMWA’s “at least 10%” conservation message was effectively received by residential customers.

An overwhelming majority of respondents (95%) stated that they were aware of TMWA’s 10% conservation request and 85% responded that the conservation goal was important. Most respondents (88%) stated they tried to achieve the 10% reduction. Of the respondents who stated they *did not* try to achieve the goal, 56% indicated it was difficult to conserve in 2015 because they had already made adjustments to reduce their water use in prior years. Notably, while approximately half of the respondents lived within a Homeowners Association (HOA), only 15% of those respondents indicated that conservation actions would not comply with their CC&Rs.

Respondents believed TMWA did a good job of promoting its water conservation campaign with 82% said yes, 13% said maybe, and 5% said no. Overall, 71% of respondents were confident in TMWA’s ability to manage the community’s water supply, with only 5% indicating they did not have confidence. The majority of the respondents received conservation information from TMWA, as opposed to other sources. The top sources of information included direct mail or email from TMWA. Respondents reported that the most useful source of information was TMWA’s website, followed by University of Nevada Cooperative Extension (with whom TMWA consults to develop much of its conservation materials).

Actions customers took to conserve water in the summer 2015

The most common type of conservation investment respondents made was to their irrigation system. Permanent alterations to the landscape were not as typical, with the least common investment being on xeriscaping. Such findings were expected given irrigation system upgrades are an ongoing and relative inexpensive investment compared to the costs associated with landscape replacement.

Table 1: Conservation Investments Respondent Made in 2015

Conservation Action	Those who did this in 2015 (N=1393)
Repaired outdoor leaks	69%
Updated irrigation system/parts	55%
Replaced indoor appliances/fixtures	33%
Replaced landscaping with materials that do not require watering (gravel, rock, concrete, patio, etc.)*	20%
Removed some/all lawn*	17%
Replaced landscaping with drought tolerant plants (xeriscape)*	15%

* indicates a permanent change to landscape

The most common conservation practices by respondents were related to outdoor irrigation activities, i.e., watering during cooler hours, shortening irrigation duration. Moreover, respondents indicated they had a more heightened general awareness of how they were using outdoor irrigation. This implies, simply being more mindful of water use led to greater efficiency of use. Allowing the lawn to become drought-stressed / discolored was least popular among the respondents. This result is expected given 87% of respondents agreed with the statement that a well-tended landscape shows pride of ownership.

Table 2: Conservation Practices Respondent Took in 2015

Conservation Practice*	Indicated they did this to use less water**
Watered only during the coolest hours of the day (N=2172)	91%
Paid more attention to how I use water outdoors (N=2178)	88%
Shortened outdoor watering times (N=2175)	88%
Ran only full loads of laundry/dishes (N=2171)	82%
Paid more attention to how I use water inside (N=2178)	78%
Turned off my irrigation during rainy/windy days (N=2151)	77%
Adjusted sprinkler patterns to prevent puddling/overspray (N=2117)	74%
Set lawnmower blades to 3 inches or higher (N=2080)	63%
Took shorter showers (N=2175)	56%
Tracked water usage using water bills or on-line account information (N=2163)	56%
Other: (N=254)	35%
Let my lawn go brown (N=2122)	15%

*conservation actions include those provided by TMWA at tmwa.com/save

**combined percentage of respondents who answered 'yes' or 'Yes!!'

Customers continue to practice water conservation

It is unlikely respondents will revert back to watering behaviors exhibited in 2013 because 89% of them indicated they would maintain the changes they made in 2015 to use less water *regardless* of future water supply conditions. Less than 1% of respondents said they would not maintain the changes.

What the survey results mean to TMWA

The survey results show that the majority of single-family residents, which are TMWA's biggest customer class, were not only aware of TMWA's water conservation campaign in the summer of 2015, but that it was important to them. In response to the summer 2015 water supply, overall TMWA's residential customers acted appropriately by taking measures to use water more efficiently. Empirical evidence on residential water usage during the summer of 2015, compared to 2013, supports these findings. Table 3 provides a breakdown of conservation rates by customer class for 2015.

Table 3: Conservation Rates by Customer Class

Customer Class	Services	2013 Use (x1000 gal)		2015 Use (x1000 gal)		Percent Change (%)	
		Median	Mean	Median	Mean	Median	Mean
Single Family Metered - TMWA	68,193	78	88.90	61	69.80	-19.70	-16.40
Single Family Metered - DWR	16,999	98	111.80	78	89.20	-19.10	-16.00
Single Family Metered - STMGID	3,164	146	160.40	112	125.10	-20.30	-18.50
Single Family Flat Rate - TMWA	3,473	185	219.60	137	165.40	-23.10	-21.60
Single Family Flat Rate - DWR	103	140	139.40	107	101.10	-24.60	-27.00
Single Family Flat Rate - STMGID	78	154	153.40	103	109.70	-29.10	-27.30
Commercial	4,945	92	423.20	71	368.20	-10.00	-8.70
Metered Irrigation	2,398	437	853.50	350	681.50	-18.00	-15.10

Note: this study looks only at water services with 2013 & 2015 billing data.

The implications of these results show that TMWA's water conservation campaign was a resounding success. Moving forward, because residential customers were able to reduce their water use *without* sacrificing previous investments they made on their landscape (i.e., planting, seeding, general maintenance and upkeep), it is not anticipated that per-service residential water use will increase in the near future. The financial implications of this behavioral change are such that decreases in revenue as a result of conservation are likely to persist in the years to come.

Appendix –CONSERVATION SURVEY 2015 – Responses Report

Do you own this house? (N=1883)

- Yes 94%
- No 5%

Between 2013 and 2015, the number of people living in this house?

	0	1	2	3	4	More than 4
How many adults 18 or older? (N=2388)	<1%	18%	63%	12%	4%	1.5%
How many children ages 13- 17? (N=1941)	86%	9.5%	3.4%	<1%	<1%	<1%
How many children ages 12 or younger? (N=1968)	80%	10%	7%	2%	<1%	<1%

Between 2013 and 2015, the number of people living in this house...(N=2376)

- Increased 10%
- Stayed the same 77%
- Decreased 13%

How much of the following landscaping types are on your property?

	None	A little bit	<	About half	>	Mostly	All
Lawn (N=2331)	14%	20%	21%	25%	7%	11%	1%
Trees (N=2295)	4%	40%	35%	13%	4%	3%	<1%
Bushes, shrubs, flowers (N=2267)	6%	38%	35%	15%	4%	3%	<1%
Vegetable garden (N=2240)	45%	35%	13%	4%	1%	<1%	<1%
Hardscape that does not need water (N=2323)	3%	20%	25%	26%	10%	13%	1%
Amount of drought tolerant bushes/shrubs (N=2206)	23%	35%	18%	10%	4%	8%	2%
Other: (N=442)	73%	10%	7%	5%	2%	2%	<1%

How often do you water using the following methods?

	Always	Often	Sometimes	Rarely	Never
By hand Lawn (N=2106)	5%	11%	32%	38%	14%
Hose with sprinkler attachment (N=1986)	5%	6%	20%	31%	37%
Automatic irrigation sprinkler (N=2238)	56%	22%	4%	1%	16%
Drip system (N=2193)	55%	21%	6%	2%	16%
Other: (N=327)	11%	2%	2%	2%	82%

Tell us how the outdoor area on your property is used

	Yes!!	yes	maybe	no	No!!
Physical Activity (N=2196)	21%	37%	14%	16%	11%
Entertainment/leisure (N=2233)	18%	41%	24%	12%	6%
Visual Appeal (N=2285)	27%	50%	14%	5%	3%

How well do these statements describe your views?

	Yes!!	yes	maybe	no	No!!
Well-tended landscaping shows pride of ownership (N=2307)	45%	42%	9%	2%	1%
I enjoy working on my property (N=2306)	30%	42%	48%	8%	2%
Having a lawn increases a home's value (N=2308)	12%	30%	38%	13%	7%
I should be able to use the water I pay for, anyway I choose (N=2296)	8%	19%	33%	37%	11%
My landscaping looks great (N=2309)	14%	44%	32%	8%	2%
A house can have beautiful landscaping without much lawn (N=2307)	33%	49%	15%	3%	<1%
Attractive landscaping depends on the neighborhood (N=2303)	6%	31%	31%	24%	7%
My landscaping helps keep my yard cool (N=2298)	13%	40%	31%	14%	2%
My landscaping helps keep my house cool (N=2301)	13%	32%	29%	22%	3%

Tell us about the neighborhood ...

	Yes!!	yes	maybe	no	No!!
In general, the neighborhood has attractive landscaping (N=2309)	16%	59%	17%	6%	1%
There are many shade trees (N=2303)	11%	43%	25%	19%	1%
Most front yards feature lawn and green plants (N=2295)	12%	59%	18%	10%	1%
Most front yards feature desert plants (N=2291)	1%	12%	33%	49%	5%
My landscaping blends in with the neighborhood (N=2309)	11%	65%	16%	7%	1%
I talk about landscaping with my neighbors (N=2307)	4%	27%	20%	38%	12%
The landscaping of other homes in the neighborhood motivates me to work on my property (N=2307)	5%	30%	27%	31%	7%

Are landscaping options for this property affected by a Homeowners' Association (HOA)? (N=2096)

- Yes 49%
- No 51%

About this HOA ...

	Yes!!	yes	maybe	no	No!!
Place restrictions on your landscaping? (N=1016)	40%	37%	10%	11%	2%
Require some of your landscaping to be lawn? (N=1014)	17%	14%	21%	39%	9%
Prevent you from letting your lawn go yellow or brown? (N=1015)	32%	36%	14%	14%	3%
Cite/fine you for breaking landscaping rules? (N=1015)	37%	39%	13%	9%	3%

Have you done any of these to this property over the last three years?

	I did not do this	I plan to in the future	We did this in... <<Check all that apply>>			
			Before 2013	2013	2014	2015
Bought new landscaping plants (N=2395)	18%	9%	47%	28%	32%	32%
Added new lawn (N=2218)	71%	4%	20%	2%	2%	2%
Re-sodded/re-seeded existing lawn (N=2225)	60%	4%	16%	9%	12%	11%
Removed some/all lawn (N=2270)	55%	6%	20%	7%	8%	10%
Replace landscaping with drought tolerant plants (xeriscape) (N=2263)	60%	9%	16%	6%	8%	9%
Replace landscaping with materials that do not require watering (gravel, rock, concrete, patio, etc.) (N=2271)	46%	7%	26%	8%	11%	12%
Repaired outdoor leaks (N=2234)	27%	6%	27%	25%	33%	41%
Updated irrigation system/parts (N=2297)	30%	7%	25%	19%	26%	34%
Replaced indoor appliances/fixtures (N=2273)	41%	7%	22%	10%	16%	20%
Other: (N=468)	72%	10%	7%	3%	6%	9%

Which months in 2015 did you do these things?

	Jan-Jun	July	Aug	Sep-Dec
Bought new landscaping plants (N=1012)	53%	23%	12%	12%
Added new lawn (N=44)	57%	16%	14%	14%
Re-sodded/re-seeded existing lawn (N=284)	53%	18%	12%	17%
Removed some/all lawn (N=245)	51%	24%	16%	9%
Replace landscaping with drought tolerant plants (xeriscape) (N=247)	51%	26%	13%	10%
Replace landscaping with materials that do not require watering (gravel, rock, concrete, patio, etc.) (N=327)	46%	25%	18%	11%
Repaired outdoor leaks(N=1298)	48%	23%	18%	10%
Updated irrigation system/parts (N=946)	52%	25%	16%	7%
Replaced indoor appliances/fixtures (N=504)	40%	17%	13%	30%
Other: (N=31)	39%	13%	13%	35%

In 2015, how much time and/or money did you spend on the changes/additions you made to your property?

	About how much time did you spend?			About how much money did you spend?		
	Less than 3 hours (1)	3 to 10 hours (2)	More than 10 hours (3)	Less than \$100 (1)	\$100 to \$500 (2)	More than \$500 (3)
Bought new landscaping plants (N=714) (N=705)	32%	36%	29%	37%	49%	14%
Added new lawn (N=41) (N=42)	20%	32%	49%	21%	33%	45%
Re-sodded/re-seeded existing lawn (N=226) (N=229)	53%	34%	13%	76%	18%	6%
Removed some/all lawn (N=192) (N=200)	32%	26%	43%	41%	21%	39%
Replace landscaping with drought tolerant plants (xeriscape) (N=173) (N=178)	27%	46%	27%	35%	39%	26%
Replace landscaping with materials that do not require watering (gravel, rock, concrete, patio, etc.) (N=238) (N=255)	15%	28%	57%	16%	30%	53%
Repaired outdoor leaks (N=908) (N=886)	57%	35%	9%	71%	25%	4%
Updated irrigation system/parts (N=693) (N=701)	47%	42%	11%	63%	28%	10%
Replaced indoor appliances/fixtures (N=399) (N=404)	55%	33%	12%	16%	30%	54%
Other: (N=22) (N=25)	23%	18%	59%	20%	20%	60%

Regarding the goal for each customer to use 10% less water in 2015...

	Yes!!	yes	maybe	no	No!!
Were you aware of TMWA's 10% reduction goal? (N=2218)	66%	29%	2%	2%	<1%
Did your household meet the 10% reduction goal? (N=2210)	44%	24%	28%	4%	1%
Did your household try to achieve the 10% reduction goal? (N=2205)	51%	37%	6%	5%	1%
Was the 10% reduction goal important to you? (N=2212)	49%	36%	9%	5%	1%

What motivates you to conserve water?

	Yes!!	yes	maybe	no	No!!
Saving money on my water bill (N=2197)	33%	42%	14%	10%	1%
Protecting an important natural resource (N=2205)	57%	35%	6%	2%	<1%
Protecting the environment and nature (N=2200)	52%	35%	10%	3%	1%
Wanting to do my fair share to help our regional get through the drought (N=2205)	52%	38%	7%	2%	1%
TMWA's request that I conserve water (N=2203)	27%	42%	18%	10%	3%
Knowing other people in my community are also doing their share to conserve (N=2189)	18%	33%	26%	18%	5%
Other: (N=230)	19%	9%	17%	20%	35%

What makes it difficult for you to conserve water?

	Yes!!	yes	maybe	no	No!!
Already had done so much conservation (N=2168)	12%	32%	21%	29%	6%
Do not have enough information on water conservation (N=2155)	3%	8%	13%	59%	17%
Do not know where to start (N=2156)	2%	9%	10%	60%	19%
The financial costs (N=2150)	5%	10%	13%	55%	16%
Not worth the time (N=2135)	1%	2%	8%	62%	27%
Do not want to sacrifice the attractiveness of my yard (N=2160)	3%	16%	26%	40%	16%
Most of my neighbors' yards have green lawns (N=2155)	6%	26%	19%	35%	14%
Using less water would put me out of compliance with my HOA rules (N=2139)	6%	9%	12%	43%	31%
Health and/or physical ability (N=2129)	2%	7%	11%	53%	28%
Other (N=277)	21%	7%	7%	29%	37%

Did you change the way you do things in 2015 to use less water?

	Yes!!	yes	maybe	no	No!!
Paid more attention to how I use water inside (N=2178)	29%	49%	10%	10%	1%
Took shorter showers (N=2174)	19%	37%	20%	22%	3%
Ran only full loads of laundry/dishes (N=2171)	31%	51%	9%	7%	1%
Paid more attention to how I use water outdoors (N=2178)	35%	53%	6%	5%	1%
Tracked water usage using water bills or on-line account information (N=2163)	19%	37%	13%	26%	5%
Let my lawn go brown (N=2122)	5%	10%	10%	53%	21%
Watered only during the coolest hours of the day (N=2172)	44%	47%	4%	4%	2%
Shortened outdoor watering times (N=2175)	41%	47%	5%	6%	1%
Turned off my irrigation during rainy/windy days (N=2151)	40%	37%	8%	12%	3%
Adjusted sprinkler patterns to prevent puddling/overspray (N=2117)	32%	42%	7%	14%	4%
Set lawnmower blades to 3 inches or higher (N=2080)	28%	35%	11%	19%	7%
Other: (N=254)	24%	11%	9%	21%	33%

As a result of your experience with water conservation in 2015, will you...

	Yes!!	yes	maybe	no	No!!
Maintain the changes you made in 2015 to use less water regardless of the drought? (N=2171)	40%	49%	9%	1%	<1%
Only maintain changes you made in 2015 should the drought continue? (N=2116)	7%	14%	15%	48%	16%
Be more aware of how your neighbors use water? (N=2113)	9%	24%	28%	30%	9%
Other: (N=215)	13%	10%	12%	27%	39%

If the drought continues, would you consider making the following changes not done in 2015?

	Yes!!	yes	maybe	no	No!!
Pay more attention to how I use water inside (N=235)	6%	38%	26%	23%	8%
Take shorter showers (N=518)	3%	21%	27%	41%	8%
Run only full loads of laundry/dishes (N=177)	11%	35%	20%	23%	11%
Pay more attention to how I use water outdoors (N=125)	12%	37%	20%	20%	11%
Track water usage using water bills or on-line account information (N=654)	10%	32%	30%	22%	6%
Let my lawn go brown (N=1504)	5%	11%	27%	40%	18%
Water only during the coolest hours of the day (N=103)	17%	36%	14%	16%	17%
Shorten outdoor watering times (N=148)	11%	32%	26%	22%	9%
Turn off my irrigation during rainy/windy days (N=300)	17%	38%	21%	14%	9%
Adjust sprinkler patterns to prevent puddling/overspray (N=355=)	18%	35%	14%	19%	14%
Set lawnmower blades to 3 inches or higher (N=508)	14%	29%	19%	22%	15%
Other: (N=119)	13%	8%	11%	29%	40%

Thinking back on TMWA's response to the drought in 2015...

	Yes!!	yes	maybe	no	No!!
Did TMWA do a good job of promoting its conservation campaign? (N=2147)	29%	53%	13%	4%	1%
Should TMWA have requested more than a 10% reduction? (N=2140)	7%	12%	40%	36%	4%
Should businesses have been asked to save more than residential users? (N=2146)	22%	25%	34%	18%	2%

Please share your opinions regarding the water supply to the Reno and Sparks area.

	Yes!!	yes	maybe	no	No!!
I am confident in TMWA's ability to manage the region's water resources (N=2151)	18%	53%	24%	4%	1%
Our water supply is more secure than those of most California locations (N=2139)	15%	38%	36%	10%	2%
The area has enough water to meet current needs (N=2134)	3%	23%	51%	19%	5%
The area has enough water to meet future needs (N=2133)	2%	9%	47%	31%	12%
New housing developments should pay more for water (N=2135)	14%	21%	33%	28%	4%
I'm concerned about how climate change might impact our region's water supplies (N=2135)	30%	33%	17%	10%	9%

Have you received information about water conservation from these sources? **(Ordered by most received)**

	Yes	No
Direct mail from TMWA (N=2121)	89%	11%
Email from TMWA (N=2099)	86%	14%
Out of state media (N=2087)	77%	23%
Fact sheets and brochures from TMWA (N=2077)	66%	34%
TMWA's website (twma.com) (N=2070)	52%	48%
TMWA's TV ads (N=2050)	44%	56%
TMWA's radio ads (N=2059)	40%	60%
TMWA's billboards (N=2054)	32%	68%
Door hanger from TMWA (N=2053)	14%	86%
Local news media (N=2035)	14%	86%
University of Nevada Cooperative Extension (N=2008)	11%	89%
TMWA's social media sites (Facebook, Twitter, Google +) (N=2045)	10%	90%
Other (N=310)	9%	91%
In-person communication from TMWA (N=2068)	5%	95%

Was the information you received from these sources useful? **(Ordered by most useful (Yes!!+yes))**

	Yes!!	yes	maybe	no	No!!
TMWA's website (twma.com) (N=1063)	24%	72%	0%	4%	<1%
University of Nevada Cooperative Extension (N=269)	25%	71%	0%	3%	<1%
Fact sheets and brochures from TMWA (N=1357)	21%	74%	0%	4%	1%
Email from TMWA (N=1772)	22%	73%	0%	5%	1%
TMWA's TV ads (N=888)	18%	76%	0%	5%	1%
Local news media (N=1544)	18%	76%	0%	5%	1%
Direct mail from TMWA (N=1874)	21%	73%	0%	5%	1%
TMWA's radio ads (N=795)	17%	76%	0%	5%	1%
TMWA's billboards (N=655)	15%	76%	0%	7%	2%
TMWA's social media sites (Facebook, Twitter, Google +) (N=191)	23%	68%	0%	8%	1%
In-person communication from (N=94)	34%	57%	0%	6%	2%
Other: (N=24)	54%	36%	0%	0%	1%
Out of state media (N=198)	13%	74%	0%	10%	4%
Door hanger from TMWA (N=282)	17%	69%	0%	11%	3%

As an adult, how you lived in places other than the Reno/Sparks area? (N=2137)

- Yes 77%
- No 33%

How well do these statements describe other areas you have lived in?

	Yes!!	yes	maybe	no	No!!
Water supply was a concern (N=1638)	18%	29%	8%	34%	10%
The cost of water was a concern (N=1633)	14%	27%	14%	37%	9%
I paid the same amount each month, no matter how much water I used (N=1627)	6%	16%	13%	47%	18%
Outdoor watering was not needed (N=1626)	8%	17%	12%	45%	18%
I experienced mandatory water use restrictions (N=1625)	7%	15%	5%	51%	22%
I experienced voluntary water use restrictions (N=1619)	8%	29%	9%	37%	17%

How long (years) have you lived in the Reno/Sparks area?

N	Min	Mean	Max
1660	<1	24	85

How old are you?

N	Min	Mean	Max
1759	22	57	100

Are you... (N=2065)

- Male 51%
- Female 49%

What is your highest level of education? (N=2100)

- Less than high school <1%
- GED <1%
- High school graduate 5%
- Occupational certification 3%
- Some college 21%
- 2 year associate degree 11%
- 4 year degree (Bachelors') 30%
- Graduate or professional degree 28%

Please indicate your total household income, before taxes, in 2014. (N=1814)

- | | |
|--|-----|
| <input type="radio"/> Under \$15,000 | 2% |
| <input type="radio"/> \$15,000 to \$24,999 | 4% |
| <input type="radio"/> \$25,000 to \$34,999 | 6% |
| <input type="radio"/> \$35,000 to \$49,999 | 9% |
| <input type="radio"/> \$50,000 to \$74,999 | 24% |
| <input type="radio"/> \$75,000 to \$99,999 | 19% |
| <input type="radio"/> \$100,000 to \$149,999 | 21% |
| <input type="radio"/> \$150,000 to \$199,999 | 8% |
| <input type="radio"/> \$200,000 or more | 6% |