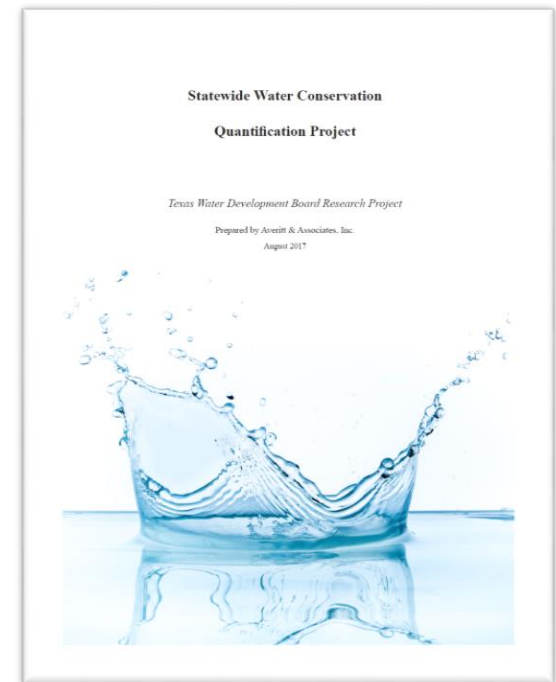


# Statewide Water Conservation Quantification Project



Water Conservation Advisory Council  
November 6, 2017

The following presentation is based upon professional research and analysis within the scope of the Texas Water Development Board's statutory responsibilities and priorities but, unless specifically noted, does not necessarily reflect official Board positions or decisions.



# Rider 26 (84<sup>th</sup> Legislature)

Amounts appropriated above in Strategy A.3.1, Water Conservation Education and Assistance, include \$1,125,000 out of the General Revenue Fund in each fiscal year of the 2016-17 biennium to be used for the purpose of meeting the municipal water conservation goals of the 2012 State Water Plan. The Water Development Board shall use the funds to develop and manage a provider contract to deliver the most effective and accurate process by which to measure water conservation statewide. The Water Development Board, by region, should quantify and install, on a pro rata basis, sufficient municipal water conservation strategies to meet the goals of the 2012 State Water Plan.

# Contracted Project Tasks

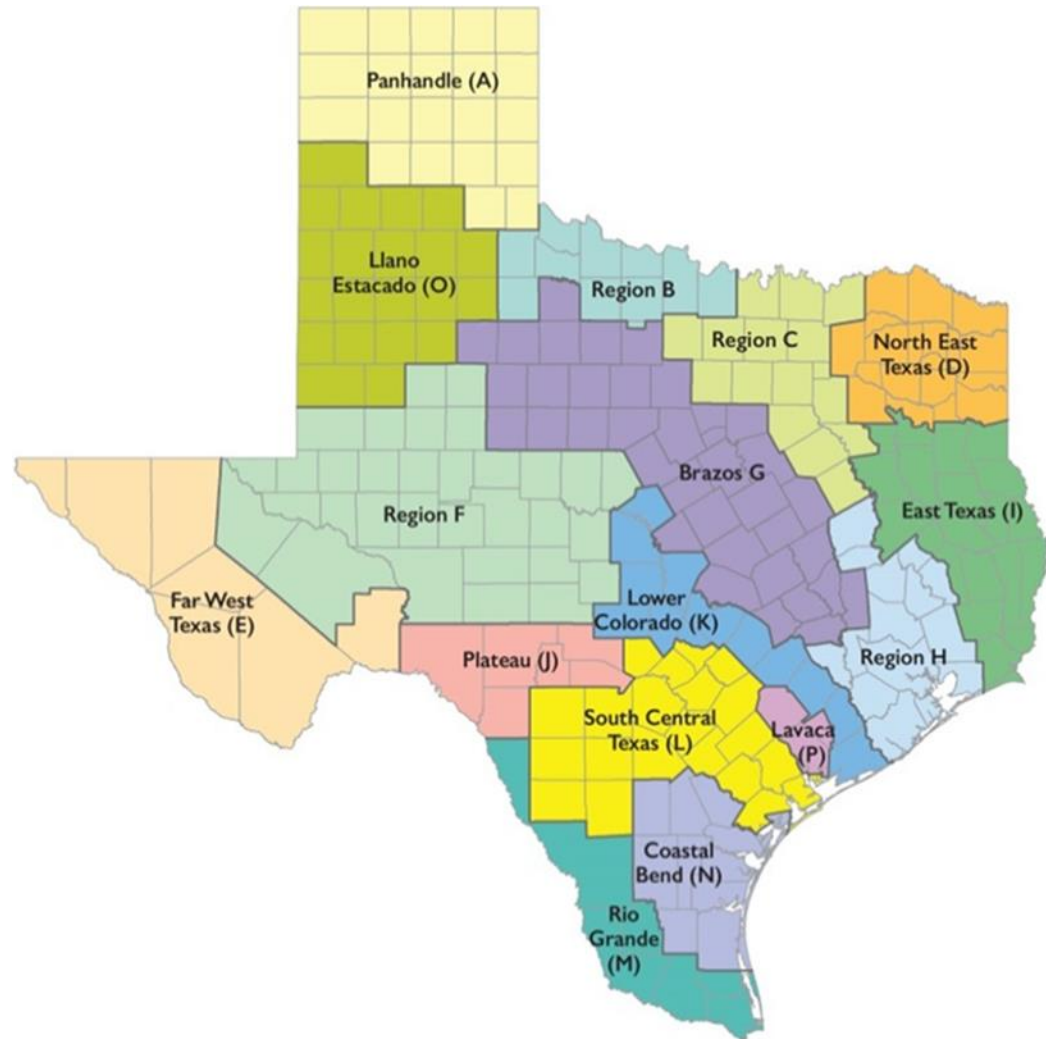
1. Develop an approach to estimate the implementation of strategies.
2. Prepare an assessment of the implementation of strategies.
3. Quantitatively determine on an annual pro-rata basis the implementation of strategies.
4. Incorporate the use of the TWDB's BMP Guide.
5. Review the 2016 Regional Plans
6. Review the 2012 BBC Quantification Study

# Project Participants

- Contacted 230 utilities
  - Conservation Plan
  - Water Needs in 2020 or 2030
  - Conservation as strategy
- 170 utilities participated
  - 17 million population by 2020, 58% of the state's population
  - 77.5% of state's 2020 municipal water conservation strategy volumes

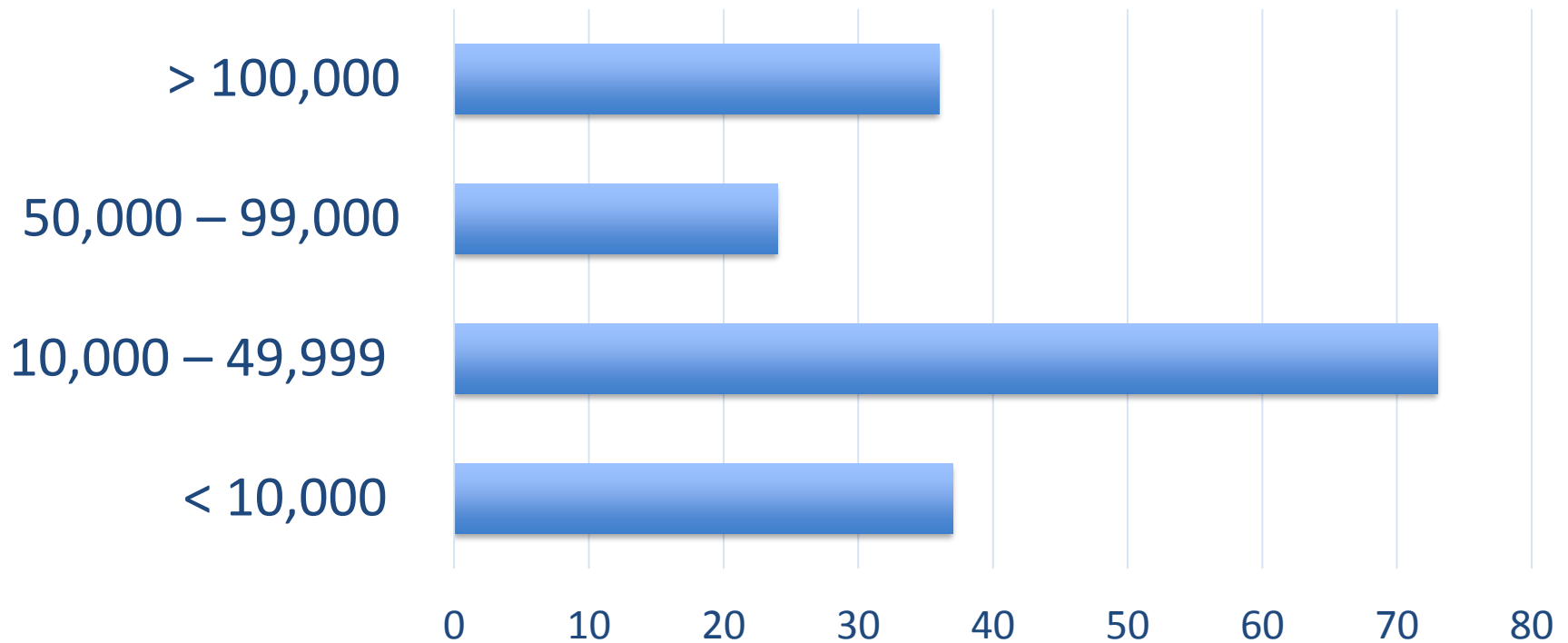
# Project Participants (170)

- A – 6
- B – 1
- C – 63
- D – 1
- E – 2
- F – 10
- G – 22
- H – 21
- I – 0
- J – 2
- K – 8
- L – 11
- M – 16
- N – 2
- O – 6
- P – 1



# Project Participants

- Population sizes of utilities



# Utility Reports

- Extensive Discussions
- List itemized activities and estimation of water savings
- Estimation of total water savings between 2012 and 2070 by activity
- Future savings vs. SWP strategy volumes
- Future savings vs Cons. Plan goals
- Suggested activities



# Activities With Quantified Water Savings

1. Advanced Metering Infrastructure System with Customer Portal
2. Conservation Pricing
3. Twice-a-week Outdoor Watering Restriction Ordinance
4. Water Rate Increases
5. Turf Replacement with Zero Irrigation Landscape

# Activities...

6. Efficient Urinal Installation (1/2 Gallon Per Flush) (ICI)
7. High-Efficiency Toilet Replacement Program (SF, MF, and ICI)
8. High-Efficiency Clothes Washer (SF)
9. Kitchen Pre-Rinse Spray Valve Replacement (ICI)
10. Low-Flow Showerhead Replacement (SF & MF)

# Activities...

11. Rain Barrels
12. Outdoor Landscape Evaluations (SF)
13. Ultra Low Flush Toilet Replacement Program (SF, MF, and ICI)
14. Save Water Co. Commercial, Multi-family and Hotel Programs
15. WaterWise Take-home Kits
16. W.I.S.E. Guys Audits

# Current Conservation Savings vs. Conservation Strategy Volumes (acre-feet per year)

	2020 Utilities	2020 Volumes	2030 Utilities	2030 Volumes	2070 Utilities	2070 Volumes
Meeting	119	157,296	99	125,401	75	158,863
Not Meeting	51	-20,315	71	-49,495	95	-272,205
All Utilities	170	136,981		75,906		-113,342

# Utilities Meeting Conservation Plan Goals

Region	Total Participating Utilities in Region	Quantified Savings Only Meeting GPCD Goals			Most Current (2015) Water Loss GPCD Meeting Water Loss GPCD Goals			Most Current Total GPCD Meeting Total GPCD Goals		
		2016	5-year	10-year	2016	5-year	10-year	2016	5-year	10-year
A	6	2	2	2	4	4	4	6	4	3
B	1	1	1	1	1	1	1	1	1	1
C	63	47	39	35	37	35	33	49	46	42
D	1	1	1	1	1	1	1	0	0	0
E	2	1	1	1	0	0	0	0	0	0
F	10	5	4	3	6	6	5	9	9	9
G	21	14	11	7	13	10	9	19	18	16
H	21	16	10	8	15	12	12	16	11	11
J	2	1	1	1	1	1	1	0	0	0
K	8	6	6	5	5	5	4	5	4	4
L	11	5	5	4	4	3	3	10	7	7
M	15	12	8	8	10	8	4	11	9	6
N	2	2	2	2	2	1	1	1	1	1
O	6	4	3	3	4	1	1	5	5	5
P	1	0	0	0	1	1	1	1	0	0
<b>TEXAS</b>	<b>170</b>	<b>117</b>	<b>94</b>	<b>81</b>	<b>104</b>	<b>89</b>	<b>80</b>	<b>133</b>	<b>115</b>	<b>105</b>

**Table 8-1. Savings from Most Widely Used Conservation Activities (in acre-feet per year).**

Year	Water Loss Reduction	Water Rate Increases	2x Watering Ordinance	Conservation Pricing	AMI with Customer Portal	Utility Outdoor Irrigation Audits	Vendor Take-home Device Kits	Vendor Retrofit Program	Rainwater Barrels	Vendor Outdoor Irrigation Audits	Accelerated PCS	Other	Total Savings from All Conservation Activity
2015	48,047	26,886	91,644	11,420	5,717	573	1,188	720	117	106	7,504	20,233	214,408
2016	51,928	54,929	103,146	11,604	5,752	477	1,188	1,230	114	108	7,845	22,056	260,590
2017	52,631	64,686	107,992	11,788	7,145	328	964	1,230	106	74	7,846	18,425	273,381
2018	53,334	65,244	109,402	11,973	7,187	135	720	1,230	98	45	7,847	17,114	274,444
2019	53,902	65,804	110,812	12,157	7,228	68	460	1,230	89	23	7,845	16,722	276,408
2020	54,473	66,358	112,223	12,342	7,270	24	228	1,230	86	7	7,872	16,616	278,747
2021	55,206	66,919	113,662	12,526	7,312	1		1,230	77		7,910	16,348	281,206
2022	55,939	67,476	115,101	12,711	7,353			1,230	65		7,828	16,327	284,042
2023	56,672	68,034	116,540	12,898	7,395			1,230	52		7,783	15,862	286,475
2024	57,472	68,588	117,979	13,083	7,437			1,230	30		7,758	15,390	288,967
2025	58,272	69,145	119,418	13,267	7,478			1,230	8		7,741	14,931	291,497
2026	59,056	69,709	120,857	13,452	7,520			1,230	1		7,741	12,084	291,650
2027	59,857	70,266	122,296	13,636	7,562			1,230			7,741	10,356	292,948
2028	60,657	70,826	123,735	13,821	7,603			1,230			7,741	9,100	294,714
2029	61,457	71,381	125,174	14,005	7,645			1,230			7,741	7,844	296,481
2030	62,258	71,941	126,613	14,190	7,687			1,230			7,741	6,588	298,248

**Table 8-2. Number of Utilities Implementing Most Widely Used Conservation Activities by Population Strata.**

2020 Population of Participating Utilities	Water Loss Reduction	Water Rate Increases	2x Watering Ordinance	Conservation Pricing	AMI with Customer Portal	Utility Outdoor Irrigation Audits	Vendor Take-home Device Kits	Vendor Retrofit Program	Rainwater Barrels	Vendor Outdoor Irrigation Audits	Accelerated PCS	Other	Total Activities	Average Per Utility
Total Under 10K	37	26	5	3	0	3	2	1	1	0	1	1	80	2.2
Total 10K-49K	73	39	19	6	0	2	9	4	0	2	7	3	164	2.2
Total 50-99K	24	17	6	2	3	7	3	3	9	2	7	6	89	3.7
Total Over 100K	36	33	16	4	3	5	8	11	8	5	9	76	214	5.9
TEXAS	170	115	46	15	6	17	22	19	18	9	24	86	547	3.2

**Table 8-3. Number of Utilities Implementing Most Widely Used Conservation Activities by Region.**

Region	Water Loss Reduction	Water Rate Increases	2x Watering Ordinance	Conservation Pricing	AMI with Customer Portal	Utility Outdoor Irrigation Audits (SF)	Vendor Take-home Device Kits	Vendor Retrofit Program	Rain Barrels	Vendor Outdoor Irrigation Audits	Accelerated PCS	Other	Total Activities	Average Per Utility
A	6	5	0	0	0	0	0	1	1	0	1	0	14	2.3
B	1	1	1	0	1	0	0	0	0	0	0	0	4	4.0
C	63	49	31	3	3	6	3	14	3	5	6	27	213	3.4
D	1	0	0	1	0	0	0	0	0	0	0	0	2	2.0
E	2	0	2	0	0	0	0	0	0	0	1	3	8	4.0
F	10	7	1	0	0	0	0	0	0	0	0	0	18	1.8
G	21	13	2	2	1	4	1	1	5	1	4	3	58	2.8
H	21	10	2	4	1	1	15	3	3	3	2	1	66	3.1
I	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
J	2	1	0	0	0	0	0	0	0	0	0	0	3	1.5
K	8	5	6	2	0	4	1	0	3	0	4	24	57	7.1
L	11	7	0	0	0	2	1	0	2	0	5	27	55	5.0
M	15	9	0	1	0	0	1	0	0	0	1	0	27	1.8
N	2	1	0	0	0	0	0	0	1	0	0	0	4	2.0
O	6	6	1	2	0	0	0	0	0	0	0	1	16	2.7
P	1	1	0	0	0	0	0	0	0	0	0	0	2	2.0
TEXAS	170	115	46	15	6	17	22	19	18	9	24	86	547	3.2

# Authors' BMP Observations (p. 42)

- Awareness of the Texas Water Development Board's BMPs is high.
- Utilities generally take a “top-down” estimation of savings before and after BMPs
- Of the 26 BMPs, 14 of them roughly correlated to the measurable activities identified in this report.
- Some of the BMPs are rather broad in scope and sometimes instructions do not cover all possible interpretations.
- Many regional reports call for more data and guidance in estimating savings for BMPs.



# Authors' Observations

- WMS volumes do not easily convey to what activities should be done.
- Tracking GPCDs and Planning GPCDs are different.
- Conservation Plan goals and SWP strategy volumes are not aligned.
- City vs utility disconnect

# Authors' Recommendations

1. RWPGs can play a vital role to educate, but should not be expected to drive conservation.
2. Wholesalers should function as key stakeholders and drivers of activities for customers.
3. Consider a stakeholder group to develop a consensus on water savings estimates.

# Authors' Recommendations

## 4. Suggested activities for utilities

- A. Advanced Metering Infrastructure with Customer Engagement Portal
- B. Twice-per-week Outdoor Watering Ordinances
- C. Conservation Water Rates
- D. Rain Barrels



# Next Step...

# Rider 24 (85<sup>th</sup> Legislature)

Water Conservation Education and Assistance, include \$127,860 out of the General Revenue Fund in fiscal year 2018 to be used for the purpose of meeting the municipal water conservation goals of the 2017 State Water Plan. The Water Development Board shall use the funds to develop and manage a provider contract to deliver the most effective and accurate process by which to measure water conservation statewide. The Water Development Board, by region, should quantify and install, on a pro rata basis, sufficient municipal water conservation strategies to meet the goals of the 2017 State Water Plan.

# Stakeholder Feedback Re Rider 24?

- Update BMP guide to include estimated water savings and costs?
- Updating RWP Uniform Cost Model?
- Technical assistance to RWPGs to develop specific Conservation BMPs?
- Other ideas?