

WATER CONSERVATION PLAN

2015 UPDATE

Conservation Workgroup

- Conservation Plan Update Workgroup
 - Twelve members
 - Subcommittee of CIRPAC
 - Offered insight on conservation plan update

MWM Model Process

- Committee selected conservation measures for evaluation
- Preliminary evaluation by MWM
- Collaboration with WCWCD
 - Update data
 - Population, water usage, account types and numbers
 - Check assumptions against measured results
 - Add new measure
- Final model run

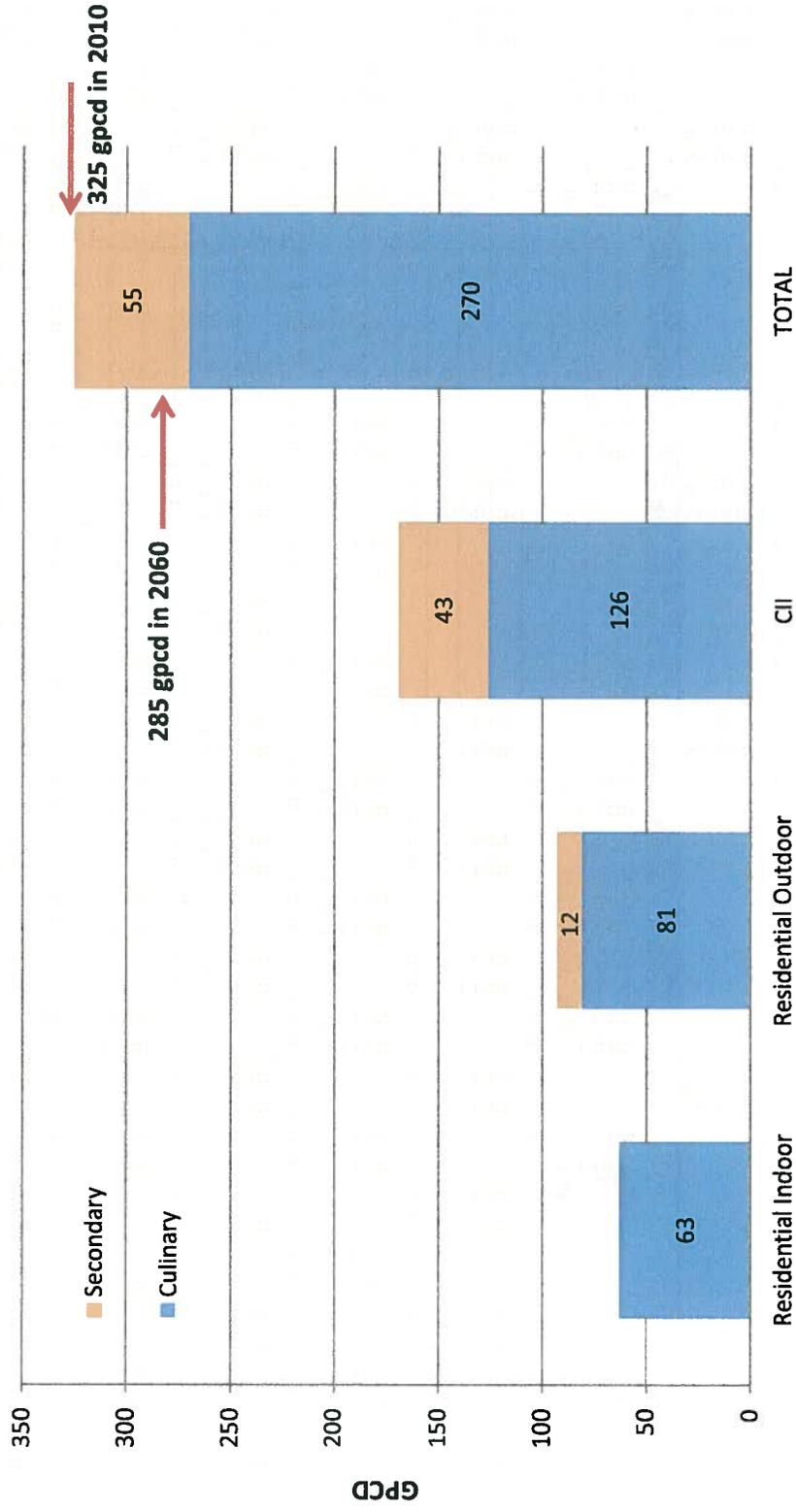
Coordination of All Plans

- Conservation Plan
- Water Needs Assessment
- 50-Year Plan
- Impact Fee Facilities Plan
- Statewide Infrastructure Plan

Program Measures

Program Scenarios	Measures	Program A	Program B	Program C
	Financial Incentives for Irrigation Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Smart Irrigation Controller Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Distribute Retrofit Kits	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Toilet Leak Detection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	High Efficiency Toilets (HET) Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Single Family Water Surveys	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Multifamily Washer Rebate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Public Information Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Conservation Pricing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Rotating Sprinkler Nozzle Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	CII Rebates to Replace Inefficient Equipment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Replace Spray Nozzles	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	High Efficiency Urinal Rebate (<.5 gallon)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Irrigation Water Surveys (Water Checks)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Xeriscape Demonstration Gardens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Train Landscape Maintenance Workers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Real Water Loss Reduction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Turf Removal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Washer Rebates for High Efficiency Machines	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	CII Surveys	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	School Building Retrofit	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Billing Report Educational Tool	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Mobile Home Park Submetering	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Install High Efficiency Fixtures in Government Buildings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Install or Rebate High Efficiency Faucets	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Water Budgeting/ Monitoring	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Require Efficient Toilets and Urinals	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Efficient Outdoor Use Education and Training Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2010 Per Capita Use



40 gallon per day reduction per person

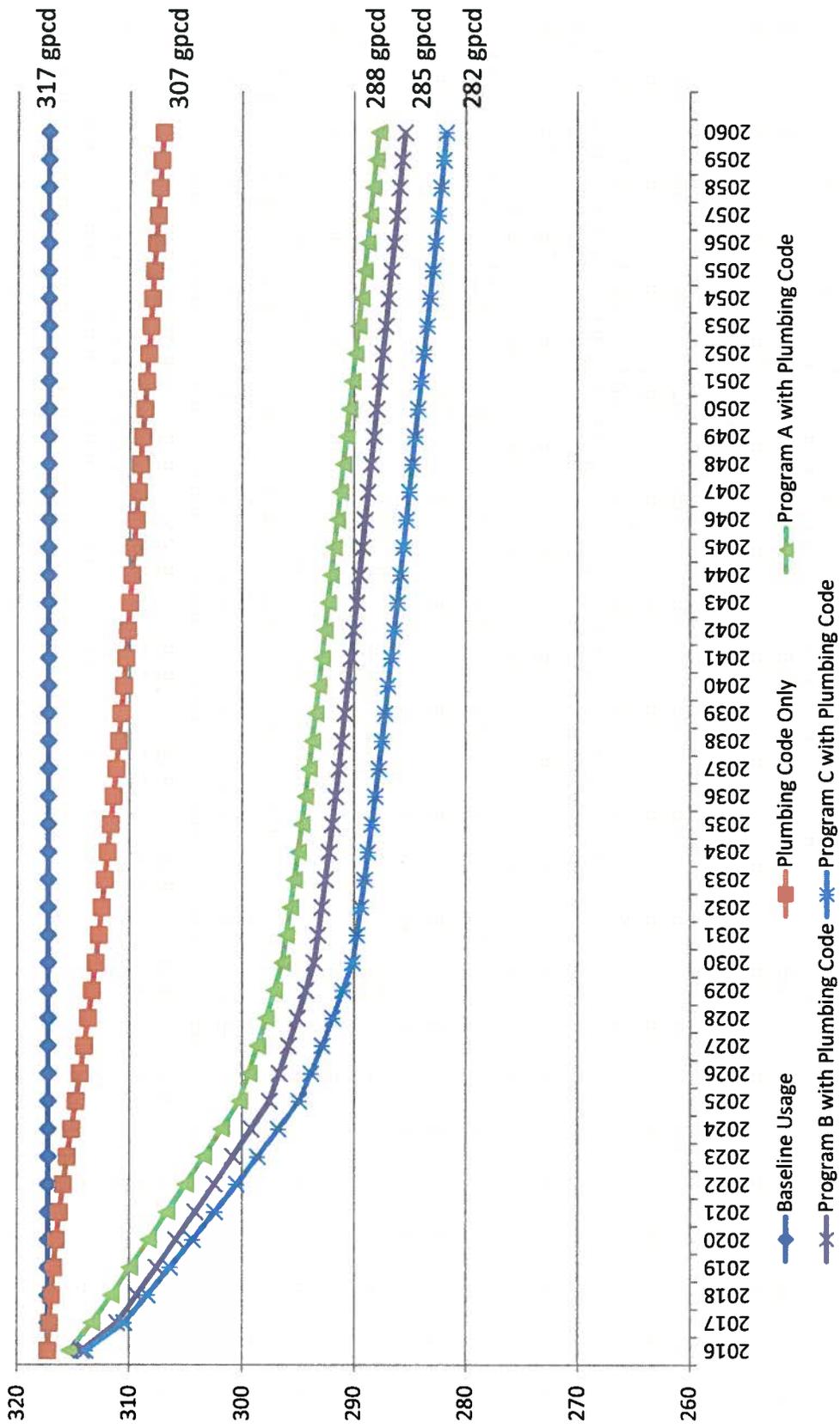
Top Water Savers

Measure Number	Measure Description	Water Savings (MGD)
17	Real Water Loss Reduction*	2.1
9	Conservation Pricing*	2.1
27	Require Efficient Toilets and Urinals	1.0
22	Billing Report Education Tool**	0.8
2	Smart Irrigation Controller Rebates*	0.4
1	Financial Incentives for Irrigation Upgrades*	0.4

*Included in current plan

**Will be included in plan update

MWM Model Results



Program Summary

Program	Community PV Cost	Average Water Savings (MGD)	Community Cost (\$/afy)
A	\$38,590,000	6.0	\$5,768
B	\$44,881,000	6.9	\$5,827
C	\$83,590,000	8.1	\$9,244

Best Cost Value

Community Cost		Measure Number	Measure Description	\$/afy
		9	Conservation Pricing*	\$200
		26	Water Budgeting/Monitoring**	\$2,400
		17	Real Water Loss Reduction*	\$2,970
		12	Replace Spray Nozzles*	\$3,750
		21	School Building Retrofit**	\$4,740

Utility Cost		Measure Number	Measure Description	\$/afy
		9	Conservation Pricing*	\$200
		26	Water Budgeting/Monitoring**	\$800
		21	School Building Retrofit**	\$1,870
		27	Require Efficient Toilets and Urinals	\$2,000
		23	Multi-Family Submetering	\$3,000

*Included in current plan

**Will be included in plan update

Water Conservation Plan Update Workgroup

Last Name	First Name	Rep
Anderson	Austin	Builders
Bergeson	Larry	WC Schools
Bringhurst	Ty	Toquerville
Butine	Tom	CDF
Fleming	Rene	St. George
Gillette	Chuck	Ivins
Hays	Brad	Santa Clara
Iverson	Victor	County
Kohler	Richard	Green Building
McArthur	Gregg	Chamber
Martin	Connie	Hurricane
Sapp	Carol	Citizen
Warner	Niki	Landscape Nurseries
Winters	Mike	Washington
Wadsworth	Colette	Agriculture
Wilson	Karl	LaVerkin



MADDAUS
WATER
MANAGEMENT INC.



MWH

BUILDING A BETTER WORLD

FINAL Technical Memorandum

Prepared for: The Utah Division of Water Resources
Washington County Water Conservancy District
Project Title: Water Conservation Technical Analysis

Technical Memorandum No 2.

Subject: Conservation Technical Analysis
Date: August 28, 2015
To: Eric Millis, Utah Division of Water Resources
Ron Thompson, Washington County Water Conservancy District
Julie Gillins, Washington County Water Conservancy District
From: Bill Maddaus, Maddaus Water Management
Michelle Maddaus, Maddaus Water Management
Brian Liming, MWH

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LIST OF ABBREVIATIONS

AWWA	American Water Works Association	IRR	irrigation
AWWARF	American Water Works Association Research Foundation	ITAP	Irrigation Technical Assistance Program
BMP	best management practice	MF	multifamily
CA DWR	California Department of Water Resources	MG	million gallons
CCF	hundred cubic feet	mgd	million gallons per day
CII	commercial, industrial, & institutional	MGY	million gallons per year
COM	commercial	MWM	Maddaus Water Management
DSS	Decision Support System	NRW	non-revenue water
EMWD	Eastern Municipal Water District	O&M	operations and maintenance
FY	fiscal year	OM&R	operations, maintenance and repair
gal	gallon	psi	pounds per square inch
GOMB	Governor's Office of Management and Budget	PV	present value
GPCD	gallons per capita per day	SF	single family
gpd/a	gallons per day per account	SWAT	smart water application technologies
gpf	gallons per flush	UBWR	Utah Board of Water Resources
gpm	gallons per minute	UDWR	Utah Department of Water Resources
GRAMA	Government Records Access Management Act	ULFT	ultra-low flow toilet
HET	high efficiency toilet	USBR	United State Bureau of Reclamation
HEU	high efficiency urinal	WCWCD	Washington County Water Conservancy District
IND	industrial	WF	water factor
INST	institutional	WNA	water needs assessment
		WUE	water use efficiency

1. EXECUTIVE SUMMARY

1.1 Introduction

In response to the State of Utah's recent decision to achieve their water conservation goals by moving up their 2060 per capita consumption targets to year 2025, the purpose of this project was to evaluate water conservation demand management alternatives, general and site-specific conservation programs, and other water efficiency measures suggested by Washington County Water Conservancy District (WCWCD), MWH, and Maddaus Water Management, Inc. (MWM). These goals were evaluated in terms of water savings, cost, and cost-effectiveness from various perspectives, including acceptability and ease of implementation. This project evaluated the impact of water conservation programs on water demand covering the period 2016 through 2060 with respect to the targets and long-term planning. Specific actions needed to achieve various levels of water savings were identified.

WCWCD is committed to water conservation, and according to state estimates has already achieved 26% reduction in total per capita usage in 2010 from 2000 baseline levels. Total per capita usage is comprised of residential, commercial, institutional, and industrial, including both indoor and outdoor usages. WCWCD is committed to achieving an additional 9% reduction in total per capita usage by 2060, for a total of 35% reduction. This analysis shows how this goal is attainable as well as which reductions can be achieved with plumbing codes, the current conservation program, and implementation of more aggressive conservation measures.

1.2 Long-Term Conservation Program Analysis and Results

MWM has prepared this Water Conservation Technical Analysis Memorandum (Memo) to identify programs and projects to most effectively meet water use requirements. This Water Conservation Technical Analysis builds on the 2010 Water Conservation Technical Analysis prepared by MWM and MWH as an update to the Lake Powell Pipeline Water Needs Assessment. The Assessment provides a planning framework and a commitment to continue to implement Best Management Practices (BMPs) for conservation.

A list of 80 conservation measures considered potentially appropriate for the WCWCD service area was developed from known technology and services that would save water. Twenty-eight conservation measures selected by Washington County community representatives were further analyzed and combined into alternative component programs of increasingly higher water savings and implementation costs. All the measures analyzed and included in Programs A, B, and C are included in Table 1-1.

Table 1-2 presents each modeled conservation program's present value of water savings, present value of utility and community costs, cost of savings per unit volume, and both the water utility and community benefit to cost ratios. Additional resources and customer contacts are required to reach higher levels of potential water savings. The plumbing code is included as passive baseline savings in addition to the long-term conservation program in Programs A-C. Most of the future program water savings consist of outdoor landscape improvements. From 2016 to 2060, up to 10% of the new water (both culinary and secondary) needed by WCWCD to accommodate planned growth could be met through aggressive conservation (Program B) implementation. Projected demand with conservation Program B savings in year 2060 represents a 35% reduction from year 2000 water use.

Table 1-1 Conservation Measures Analyzed

General Measures	Residential Measures (Indoor)	Commercial Measures (Indoor)	Irrigation Measures (Outdoor)
Real Water Loss Reduction*	Distribute Retrofit Kits*	CII Surveys*	Irrigation Water Surveys (Water Checks)*
Conservation Pricing*	Single Family (SF) Water Surveys*	CII Rebates to Replace Inefficient Equipment*	Xeriscape Demonstration Gardens*
Public Information Program*	Toilet Leak Detection*	Replace Spray Nozzles*	Train Landscape Maintenance Workers*
Water Budgeting/Monitoring*	Multifamily Washer Rebate*	High Efficiency Urinal Rebate (<.5 gallon)*	Financial Incentives for Irrigation Upgrades*
Billing Report Educational Tool*	Require Efficient Toilets and Urinals	School Building Retrofit*	Smart Irrigation Controller Rebates*
Mobile Home Park Submetering	Washer Rebates for High Efficiency Machines (SF)	Install High Efficiency Fixtures in Government Buildings*	Rotating Sprinkler Nozzle Rebates*
Efficient Outdoor Use Education and Training Program*	High Efficiency Toilet (HET) Rebates*	High Efficiency Toilet (HET) Rebates*	Turf Removal
		Install or Rebate High Efficiency Faucets	
		Require Efficient Toilets and Urinals	

*Represents measures in Program B.

Table 1-2 Conservation Program Comparison

Conservation Program	Present Value of Water Savings	Present Value of Utility Costs	Present Value of Community Costs	Utility Cost of Water Saved (\$/MG)*	Community Cost of Water Saved (\$/MG)*	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Program A with Plumbing Code	\$133,889,976	\$26,500,720	\$38,589,697	\$270/MG	\$393/MG	5.1	3.7
Program B with Plumbing Code	\$155,723,518	\$31,960,615	\$44,881,264	\$283/MG	\$397/MG	4.9	4.0
Program C with Plumbing Code	\$182,476,548	\$39,887,538	\$83,589,546	\$301/MG	\$630/MG	4.6	2.6

* Cost of water saved per unit volume = present value of costs (utility or community) divided by program water savings. Costs and savings are for the analysis period (years 2016-2060).

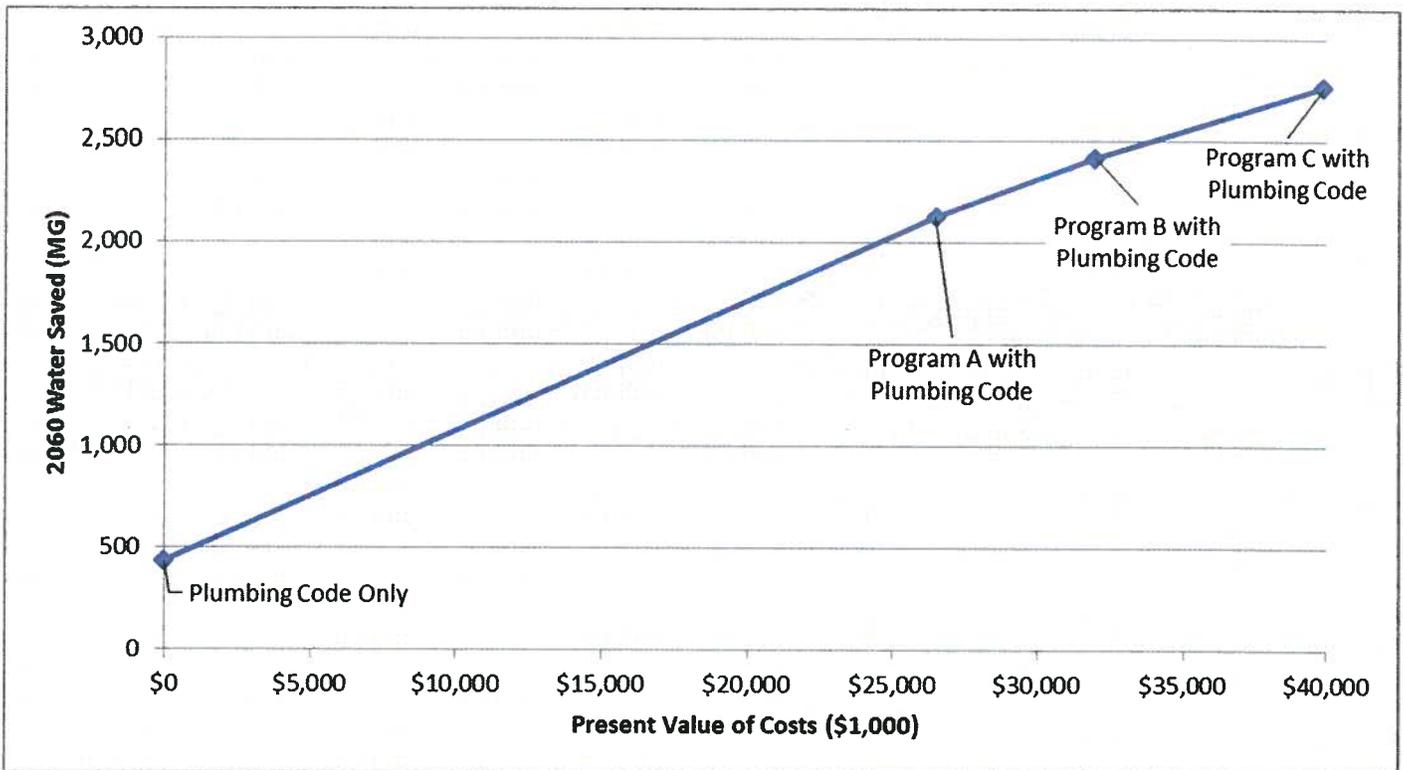
Table 1-3 shows the projected savings from Plumbing Code Only and each conservation program with Plumbing Code: Program A (continue current program, 18 measures), Program B (add 5 new measures to current Program A), and Program C (implement all 28 measures).

Table 1-3 Conservation Program Long Term Water Savings

Water Savings (MGY)	2020	2025	2030	2040	2050	2060	Year 2060 Indoor Water Savings	Year 2060 Outdoor Water Savings
Plumbing Code Only	54	218	433	909	1,473	2,158	2,158	0
Program A with Plumbing Code	643	1,477	2,124	3,245	4,590	6,199	166	6,033
Program B with Plumbing Code	816	1,711	2,414	3,598	5,013	6,697	399	6,298
Program C with Plumbing Code	923	1,939	2,763	4,084	5,643	7,476	1,093	6,383

Figure 1-1 illustrates there are apparent diminishing returns when measures are added beyond Program B. Program A reflects estimated water savings derived from continuing the current program and the plumbing code. The additional measures that create programs B and C produce increasing incremental water savings and costs.

Figure 1-1 Conservation Program Costs versus Savings



Due to prior conservation efforts, Program B will meet the State of Utah’s goal of a 35% reduction in total use by 2060.

2. INTRODUCTION

This section provides an overview of the Washington County Water Conservancy District's water system, describes the purpose and scope of the Conservation Technical Analysis, and provides a project history of the steps used to complete the conservation analysis.

2.1 Project Background

In response to the State of Utah's recent decision to achieve their water conservation goals by moving up their 2060 per capita consumption targets to 2025, the purpose of this project is to evaluate water conservation demand management alternatives, general and site-specific conservation programs, and other water efficiency measures suggested by WCWCD, MWH, and Maddaus Water Management (MWM). These were evaluated in terms of their water savings, costs, and cost-effectiveness from various perspectives, their acceptability, and their ability to be implemented. This project will evaluate the impact of water conservation programs on water demand covering the period 2014 through 2025 with respect to the targets and to 2060 for long-term planning. Specific actions needed to achieve various levels of water savings were identified.

WCWCD is committed to water conservation and, according to state estimates already achieved 26% reduction in total per capita usage in 2010 from 2000 baseline levels. Total per capita usage is comprised of residential, commercial, institutional and industrial, including both indoor and outdoor usages. WCWCD is committed to achieving an additional 10% reduction in total per capita usage, or a total 35% reduction, by 2060. This analysis shows how this goal is attainable and the reductions which can be achieved with plumbing codes, the current conservation program, and implementation of more aggressive conservation measures. MWM and MWH have prepared this Conservation Technical Analysis Memorandum (Memo) to identify programs and projects to most effectively meet water use requirements. This Conservation Technical Analysis builds on the 2010 Water Conservation Technical Analysis prepared by MWM and MWH as an update to the Lake Powell Pipeline Water Needs Assessment. The Lake Powell Pipeline Water Needs Assessment provides a planning framework and a commitment to continue to implement Best Management Practices (BMPs) for conservation.

2.2 Overview of the Washington County Water Conservancy District's Water System

In 2012, baseline population projections were provided from the State of Utah's Governor's Office of Management and Budget (GOMB), which predicted Washington County growing from 139,000 people in 2010 to over 196,000 by year 2020 and 577,000 by 2060. The GOMB plans to release new population estimates in year 2017. WCWCD primarily wholesales water to municipalities that currently have approximately 60,000 service connections.

The WCWCD is a political subdivision of the State of Utah (State) organized and existing under the Water Conservancy District Act. As such, the WCWCD follows the Utah Open & Public Meetings Act and the Government Records Access Management Act (GRAMA). The WCWCD was established in 1962 in response to a petition signed by the property owners of Washington County (County). The WCWCD is charged with conserving, developing, managing and stabilizing water supplies within the County. The WCWCD provides water to over 85% of the people of the County and operates facilities from Kolob to Gunlock. The service area is the entire County. WCWCD has water service agreements with the cities of St. George, Washington, Hurricane, Ivins, La Verkin, Virgin, Toquerville, Santa Clara, and Leeds.

The climate in WCWCD's service area is generally warmer than the rest of Utah with a subtropical desert climate of hot summers and brief, cool winters. The average temperature ranges from 41° F in December to 88° F in July. Average rainfall is about 8 inches per year. Precipitation mostly comes from the Pacific Ocean from late fall through early spring.

2.3 DSS Model

Maddaus Water Management's Demand Side Management Least Cost Planning Decision Support System (DSS Model) prepares long-range, water demand and conservation water savings projections. The DSS Model is an end-use model that breaks down total water production (i.e., water demand in the service area) into specific water end uses, such as toilets, faucets, or irrigation. This "bottom-up" approach allows for detailed criteria to be considered when estimating future demands, such as the effects of natural fixture replacement, plumbing codes, and conservation efforts. The purpose of using end use data is to enable a more accurate assessment of the impact of water efficiency programs on demand and to provide a rigorous and defensible modeling approach necessary for projects subject to regulatory or environmental review.

The DSS Model prepares short and long-range detailed water demand and conservation savings projections to enable a more accurate assessment of the impact of water efficiency programs on demand. The DSS Model can use either a statistical approach to forecast demands (e.g., an econometric model) or forecasted increases in population and employment to evaluate future demands. Furthermore, the DSS Model evaluates conservation measures using benefit-cost analysis with the present value of the cost of water saved and benefit to cost ratio as economic indicators. The analysis is performed from various perspectives, including those of the utility and community.

The DSS Model's demand estimates take into account savings from passive conservation. Passive conservation refers to water savings resulting from customer actions and activities that do not depend on direct assistance from water agency conservation programs. This includes water savings resulting from: 1) the natural replacement of existing plumbing fixtures with water-efficient models required under current plumbing code standards, and 2) the installation of water-efficient fixtures in new buildings and retrofits as required under federal and state law.

More information about the DSS Model can be found in Attachment A.

2.4 Purpose and Scope of Conservation Analysis

The purpose of this task is to prepare an updated Water Conservation Technical Analysis to evaluate how water efficiency goals can be met in a cost-effective manner with measures that are feasible to implement by WCWCD. Key components of the plan include:

- Assessing the effect of recent population growth, employment, and climatological trends on regional water use characteristics;
- Updating and further examining market penetration, water savings, and benefits and costs of WCWCD current program to identify if they are currently on track to meet their 2025 goal; and
- Identifying the best methods of achieving the required 10% per capita savings by 2025, relative to 2010.

Project Timeline

April 2014

- MWM was requested to update the 2010 Water Conservation Technical Analysis.
- Data request was submitted to WCWCD.

- Data collection and analysis obtained from WCWCD.
- MWM conducted literature review.

May 2014

- Prepared measure list was reviewed and finalized by Water Conservation Plan Update Workgroup (Workgroup) for conservation measures analysis.
- Meetings were held with WCWCD staff and Workgroup to review demand analysis preliminary findings.

June - September 2014

- MWM worked directly with WCWCD staff to design individual conservation measures (e.g., program start and end date, assumed participation rates, incentive and utility cost values, etc.).
- MWM set up and calibrated a DSS Model to evaluate water savings, costs and benefits from potential conservation measures.
- Meetings were held with WCWCD staff and Workgroup to review conservation modeling results and preliminary findings.
- Draft Water Conservation Technical Analysis completed for WCWCD.

October 2014

- Water Conservation Technical Analysis completed and Technical Memorandum provided to WCWCD.

June - August 2015

- Revised DSS Model demand and water conservation measure analysis and memorandum per the request of WCWCD.

2.5 Contents

The following information is included in this report and is discussed in individual sections below:

- Section 3 - Analysis of Historical and Baseline Water Demands
- Section 4 - Water Conservation Modeling Process
- Section 5 - Modeling Results
- Section 6 - Conclusions
- Attachment A - DSS Model Background
- Attachment B - Measure Screening Process and Results
- Attachment C - Conservation Measure Inputs

3. ANALYSIS OF HISTORICAL AND BASELINE WATER DEMANDS

The historical water use patterns were analyzed based on water production and consumption data provided by WCWCD. Based on the water billing system data and the total dwelling units reported for 2008-2012 in the U.S. Census American Community Survey 5-Year Estimates for Washington County, residential water use was broken down into single family and multifamily categories. Historical data was segregated into indoor and outdoor water use by customer type using the billing data. Other non-residential categories of use were analyzed separately, such as commercial, institutional, and secondary customer use. It is important to note here a unique characteristic of homeowners in the county: Based on Washington County assessor data, over a quarter of the homes in Washington County are second homes, most of which are occupied during the winter months but vacant during the summer. These non-permanent residents can influence per capita water use by increasing indoor water use when they are in town. They also increase outdoor water use by maintaining lawns year round, even when they are not present (WNA, 2010).

Future community-wide conservation savings will be achieved by implementing both passive and active measures. Passive measures are codes and standards that force consumers to update appliances and fixtures to increase conservation savings. Active measures are those in which WCWCD will invest to promote conservation, such as incentives and educational programs.

3.1 Key Assumptions to the DSS Model

The demand analysis process includes using baseline average water use per customer to forecast water demands by customer category based upon forecasted increases in population and employment to predict customer category account growth. Average water use per customer category account was based on a water use data analysis investigating historical and current water use data and demographic data. This analysis includes the following elements:

- *Model Start Year* – This is the starting year for the analysis. For this project, the start year for the model is 2016. The DSS Model includes 45 years of data projecting information until the year 2060.
- *Base Year for Future Water Factors* – Water use in 2010 was used as a baseline for developing future water use projections. A reduction factor was used to account for plumbing code & county-wide conservation program savings from 2010 to the DSS Model’s 2016 start year. A plumbing code savings reduction factor of 0.5% per year and a conservation program savings reduction factor of 0.25% per year were estimated.
- *Average gal/day/acct* – This is the amount of water in gallons that is used per day, per account.
- *Indoor/Outdoor Water Use* – This is the amount of water per account split into the percent that is used indoors and outdoors.
- *Non-Revenue Water (NRW)* – This is the sum of all water input to the system that is not billed (metered and unmetered) water consumption, including apparent (metering accuracy) and real losses. This value is calculated by taking the difference between the amount of water produced and the amount of water that was sold. This value is estimated to be 10% county-wide.

The following Table 3-1 shows the key inputs and assumptions used in the model. The assumptions having the most dramatic effect on future demands are: 1) the natural replacement rate of fixtures; 2) how residential or commercial future use is projected; and 3) the percent of estimated non-revenue water. More details on these assumptions, including screenshots of where they are incorporated into the DSS Model, can be found in Attachment A.

Table 3-1 Water Use Data Analysis and DSS Model Key Assumptions

Parameter	Model Input Value, Assumptions, and Key References
Model Start Year	2016
Water Demand Factor Year (Base Year)	2010 A reduction factor was used to account for plumbing code and county-wide conservation program savings from 2010 to the 2016 start year. A plumbing code savings reduction factor of 0.5% per year and a conservation program savings reduction factor of 0.25% per year were estimated.
Non-Revenue Water in Start Year	10% This value can be found in the green NRW section of WCWCD's DSS Model.
Population Projection Source	Utah Department of Water Resources Kanab/Virgin River Basin projections provided on July 9, 2015
Employment Projection Source	Governor's Office of Planning and Budget 2012 Baseline Projections
Avoided Cost of Water	\$2,987/MG (\$973/AF) This value can be found in the "Avoided Costs" red section of WCWCD's DSS Model.
Residential End Uses	Model Input Values are found in the "End Uses" section of the DSS Model on the "Breakdown" worksheet. Key References: CA DWR Report "California Single Family Water Use Efficiency Study," (DeOreo, 2011 – Page 28, Figure 3: Comparison of household end-uses) and AWWARF Report "Residential End Uses of Water" (DeOreo, 1999 – Page 108, Table 5.9: Percentage of average indoor gallons per capita per day usage).
Non-Residential End Uses, %	Model Input Values are found in the "End Uses" section of the DSS Model on the "Breakdown" worksheet. Key Reference: AWWARF Report "Commercial and Institutional End Uses of Water" (Dziegielewski, 2000 – Appendix D: Details of Commercial and Industrial Assumptions, by End Use).
Efficiency Residential Fixture Current Installation Rates	Model Input Values are found in the "Codes and Standards" green section of the DSS Model by customer category fixtures. U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). Key Reference: California Urban Water Conservation Council Potential Best Management Practice Report "High Efficiency Plumbing Fixtures – Toilets and Urinals" (Koeller, 2005 – Page 42, Table 8 and Table 9: Residential toilet installation rates in California). Key Reference: Consortium for Efficient Energy (www.cee1.org).
Water Savings for Fixtures, gal/capita/day	Model Input Values are found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model. Key References: AWWARF Report "Residential End Uses of Water" (DeOreo, 1999 – Page 99, Table 5.5: Toilet flush volume, per capita use, and utilization, 12 study sites; Page 102, Table 5.6: Shower per capita use, volume, duration, and flow rate, 12 study sites) and CA DWR Report "California Single Family Water Use Efficiency Study" (DeOreo, 2011 – Page 28, Figure 3: Comparison of household end-uses). WCWCD supplied data on costs and savings; professional judgment was made where no published data was available.

Parameter	Model Input Value, Assumptions, and Key References
Non-Residential Fixture Efficiency Current Installation Rates	Model Input Values are found in the "Codes and Standards" green section of the DSS Model by customer category fixtures. Key Reference: 2010 U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). Assume commercial establishments built at same rate as housing, plus natural replacement.
Residential Frequency of Use Data, Toilets, Showers, Washers, Uses/user/day	Model Input Values are found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model and confirmed in each "Service Area Calibration End Use" worksheet by customer category. Key Reference: Falls within ranges in AWWARF Report "Residential End Uses of Water" (DeOreo, 1999 – Page 99, Table 5.5: Toilet flush volume, per capita use, and utilization, 12 study sites, Page 102, Table 5.6: Shower per capita use, volume, duration, and flow rate, 12 study sites).
Non-Residential Frequency of Use Data, Toilets and Urinals, Uses/user/day	Model Input Values are found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model, and confirmed in each "Service Area Calibration End Use" worksheet by customer category. Key References: Estimated based on AWWARF Report "Commercial and Institutional End Uses of Water" (Dziegielewski, 2000 – Appendix D: Details of Commercial and Industrial Assumptions, by End Use). Based on three studies of office buildings in which the numbers varied from 2.0 to 3.45 toilet flushes per employee per day: Darell Rogers cited in Schultz Communications (1999); Konen Plumbing Engineer July/August 1986); and Eva Opitz cited in PMCL (1996). Fixture uses over a 5-day work week are prorated to 7 days.
Natural Replacement Rate of Fixtures	Model Input Value: Residential Toilets 2% per year (1.28 gpf and 1.6 gpf toilets), 2.5% (3.5 gpf and higher toilets)
	Model Input Value: Commercial Toilets 2% (1.28 gpf and 1.6 gpf toilets), 2.5% (3.5 gpf and higher toilets)
	Model Input Value: Residential Showers 4%
	Model Input Value: Residential Clothes Washers 10%
	Model Input Value: 4% replacement rate corresponds to 25-year life of a new fixture.
	Model Input Value: 10% replacement rate based on 10-year washer life. Key References: "Residential End Uses of Water" (DeOreo, 1999) and "Bern Clothes Washer Study, Final Report" (Oak Ridge National Laboratory, 1998).
	Model Input Value is found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model.
Future Residential Water Use	Increases Based on Population Growth and Demographic Forecast
Future Non-Residential Water Use	Increases Based on Population Growth and Demographic Forecast

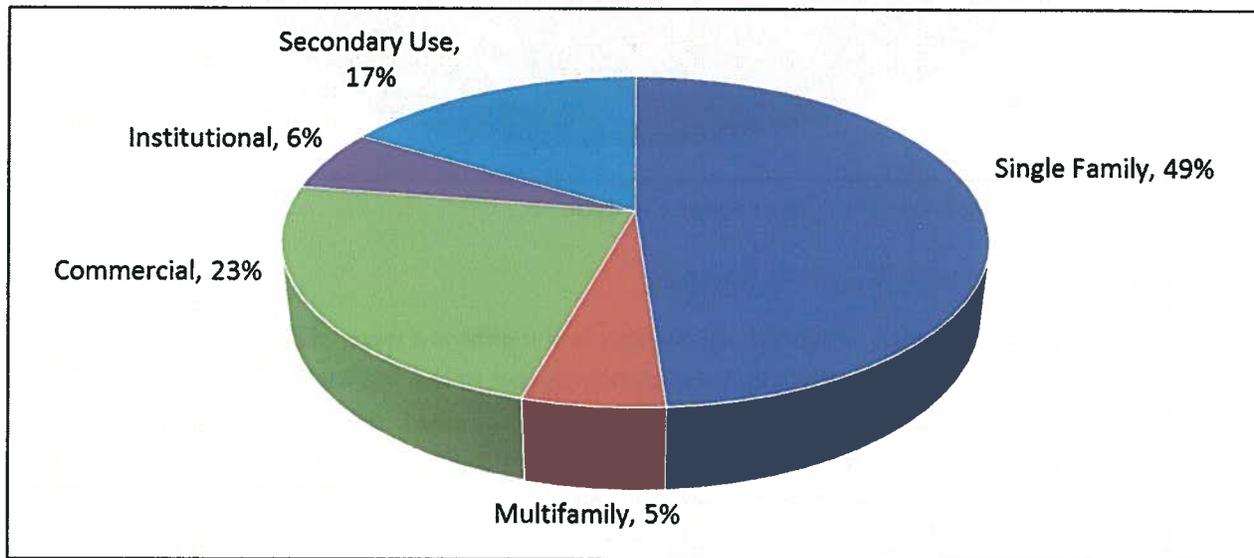
Maddaus Water Management employed its DSS Model for this water conservation technical analysis. Population projections to 2060 for the Kanab/Virgin River Basin were provided by the State and applied to an estimated 2016 GPCD by customer category developed from 2010 customer category use and used in the DSS Model as a baseline demand. Then, plumbing code and conservation savings were estimated annually and applied to this baseline GPCD and demand in order to reduce projected GPCD levels. Population projections from the State and employment projections from the

Governor's Office of Planning and Budget 2012 Baseline Projections Report were used to determine projected water demands to 2060 for WCWCD.

3.2 Consumption

Historical water consumption (billed water) data for the year 2010 was referenced in this analysis. Historical water consumption data was measured at the customer meters. WCWCD has a variety of customer categories utilized in their billing system. This Memo has organized users into single family residential, multifamily residential, commercial, institutional, and secondary use categories. Residential water use accounts for over half of all water consumed. Residential includes single family, multifamily and second-home water use. Figure 3-2 presents the water usage breakdowns within WCWCD based on 2010 water use data.

Figure 3-1: Consumption by User Group

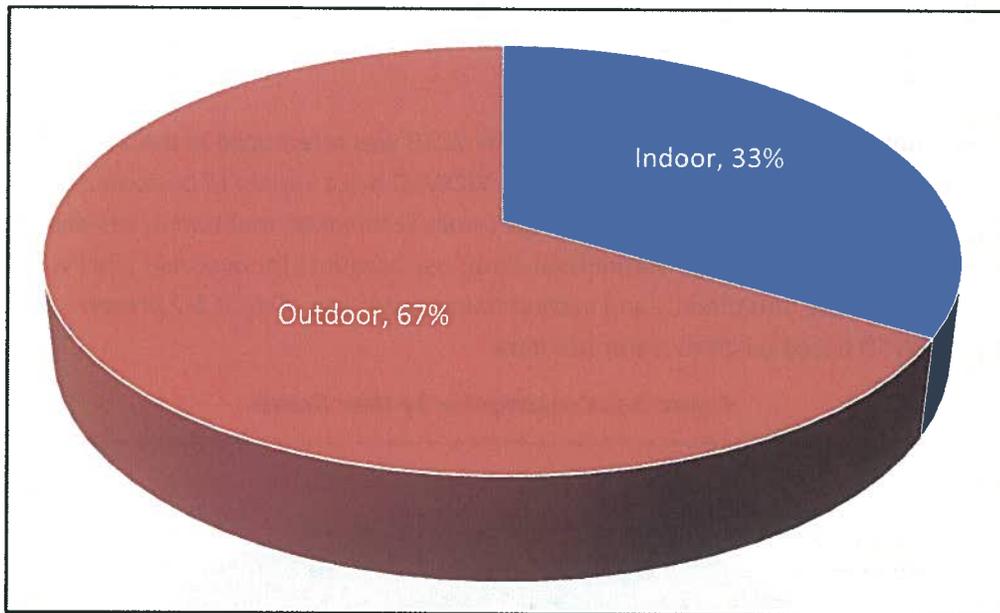


Notes:

1. Figure is based on 2010 water use data.
2. Secondary Use includes untreated water for outdoor irrigation use for residential single family, multifamily, second-home, commercial, industrial, and institutional customer categories.
3. Non-revenue water is NOT included in this figure.

Figure 3-2 shows the breakdown of water use into indoor and outdoor components. This breakdown is based on the assumption that water use during the months of December and January represent indoor water use since outdoor water use is at a minimum. While there may be minimal landscape watering in the winter, or leakage from irrigation systems, it is assumed that this is less than 5-10% of the average winter water use. This approach helped understand historical use patterns and allow water conservation planning to focus on the area with the highest overall category of use. Indoor use is approximately 33% of water consumption.

Figure 3-2: Overall Use: Indoor vs. Outdoor



Note: Figure is based on 2010 water use data.

3.3 Codes and Standards (Passive) Savings

Since it is beneficial to model the impact of the natural changes in the different types of appliances, the DSS Model forecasts service area water fixture use. In the codes and standards part of the DSS Model, specific fixture end use type (point of use fixture or appliance), average water use, and lifetime are compiled. Additionally, state and national plumbing codes and appliance standards for toilets, urinals, showers, and clothes washers are modeled by customer category. These fixtures and plumbing codes can be added to, edited, or deleted by the user. This yields two demand forecasts: 1) with plumbing codes, and 2) without plumbing codes.

Table 3-2 presents WCWCD's projected population, employment, and consumption. Figure 3-3 presents projected demand with and without plumbing code savings.

Information and assumptions about plumbing code and appliance standards can be found in Attachment A.

The demand projections reflect average water use under average weather conditions and **do NOT** reflect drier and hotter drought conditions. Likewise, climate change (which might alter weather patterns), increased or decreased rainfall, and possible increased irrigation demand in the spring and fall (due to a warmer climate) have **NOT** been addressed in this analysis.

Plumbing code measures account for 32% of the future conservation potential achieved and are independent of any program; they are based on customers following applicable current local, state and federal laws, building codes, and ordinances.

The DSS Model shows total cumulative plumbing code savings of 218 million gallons per year by 2025. The plumbing codes and appliance standards will reduce 2060 demands by 2,158 MG or 3.2% of demands without the plumbing code. Further reductions in demand due to voluntary and regulatory conservation measures are calculated from an end-use version of the demands with the plumbing code.

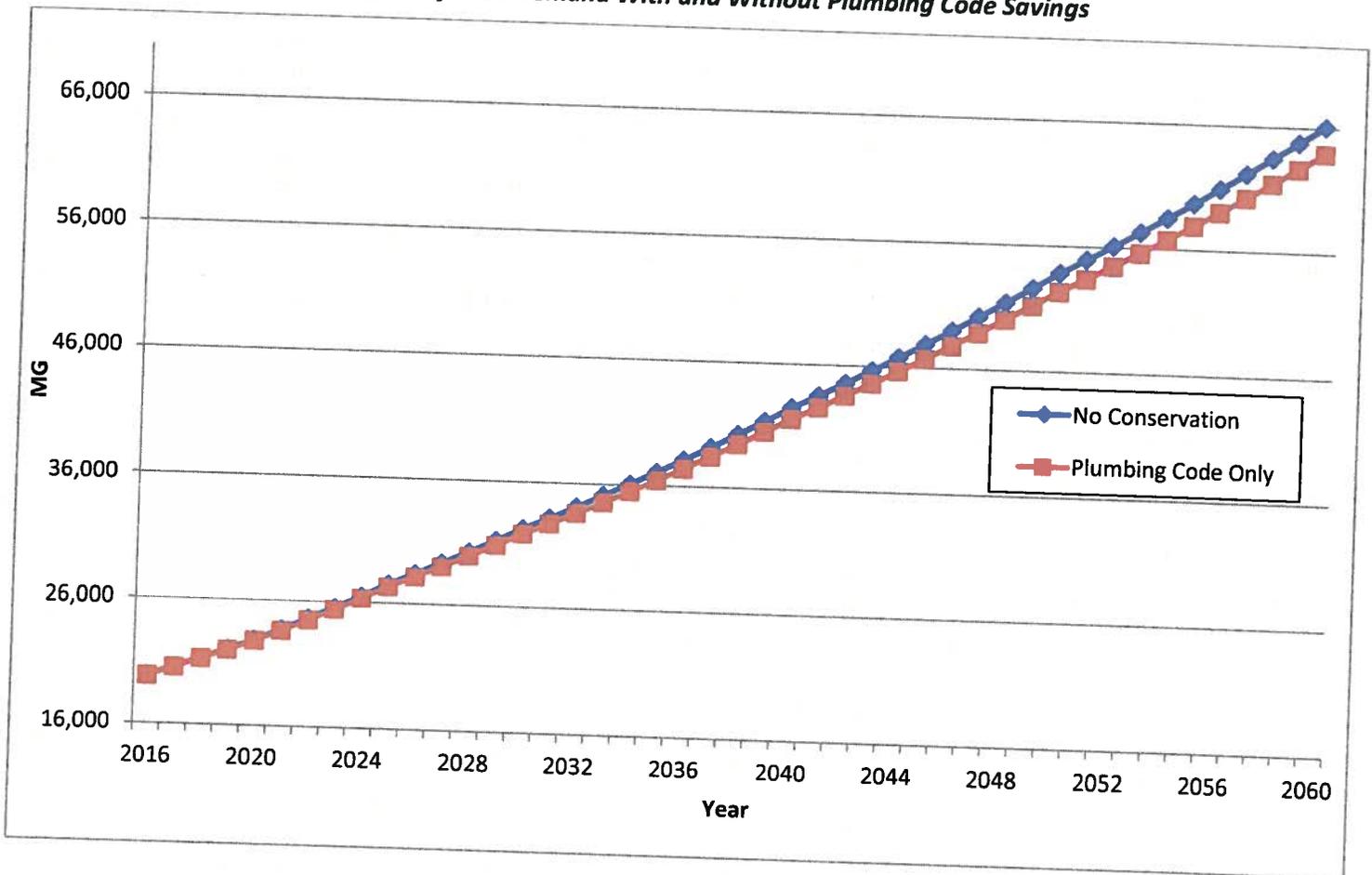
Table 3-2 Historical and Projected Demographics and Baseline Demand

Year	Population	Employment	Projected Demand (MG)	Projected Demand with Plumbing Code (MG)	Projected GPCD	Projected GPCD with Plumbing Code
2020	196,478	109,376	22,801	22,747	317	316
2025	237,874	129,316	27,536	27,318	317	315
2030	279,270	149,256	32,267	31,834	317	313
2040	369,366	190,954	42,527	41,618	317	310
2050	468,987	236,376	53,855	52,382	317	309
2060	576,846	285,000	66,106	63,948	317	307

Notes:

1. The DSS Model's start year is 2016. This analysis assumes year 2016 GPCD represents baseline water use with a reduction due to projected plumbing code savings. Baseline GPCD is based on UDWR's GPCD population as well as use projections to 2060 for the Kanab/Virgin River Basin.
2. Secondary Use is included in demand estimates.
3. This projection assumes that the mix of potable (culinary) and secondary water demand is the same in the future as in the base years. This does not assume that new secondary systems would allow for the replacement of potable (culinary-grade) water used outdoors with secondary-grade water. Baseline demand projections assume no conservation of any type is implemented. Plumbing code only assumes that the national plumbing code is implemented over time.

Figure 3-3 Projected Demand With and Without Plumbing Code Savings



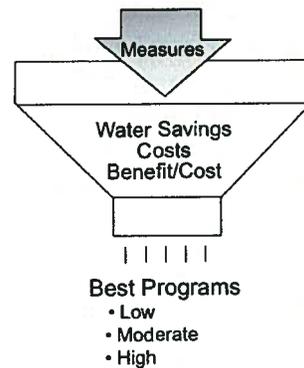
4. WATER CONSERVATION MODELING PROCESS

Maddaus Water Management employed its DSS Model for this technical analysis. The following sections describe key elements used in the analysis that were reviewed during one public workshop and meeting along with several webinars.

4.1 Overview of Evaluation Process

During the evaluation process, water savings were estimated and cost assumptions for the measures were developed by MWM and WCWCD staff. Benefits and costs were compared in a formal present value analysis and conclusions were drawn regarding which measures produce cost-effective water savings. This process can be thought of as an economic screening process, shown in Figure 4-1. Packaging the best measures into alternative programs allows WCWCD to consider what level of conservation is appropriate.

Figure 4-1 Evaluation Process



Benefit-cost analysis has been used by many water agencies to evaluate and help select a water conservation measure best suited to local conditions. This analysis requires a locale-specific set of data, such as historical water consumption patterns by customer class, population projections, age of housing stock, and prior conservation efforts.

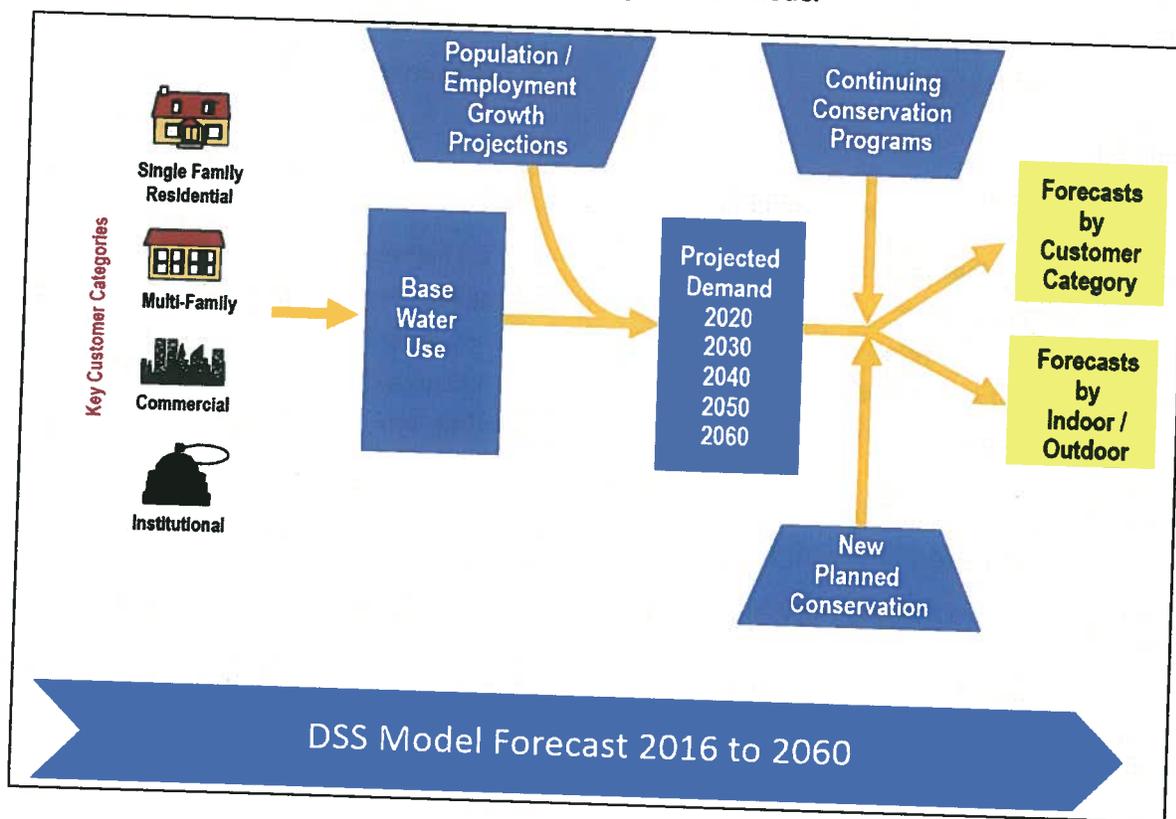
The following eight steps were used to implement the methodology by expanding upon the same DSS Model used to prepare the demand projections.

1. **Determine water use projections without the national plumbing code savings using 2010 GPCD by customer category and UDWR population projections.** Projections cover each key customer category and are broken down into indoor and outdoor end uses. Evaluate the impact of the plumbing code changes.
2. **Identify possible water conservation measures and screen the measures qualitatively** to identify those that are applicable to the service area. Develop appropriate unit water savings and cost factors for each measure.
3. **Estimate the affected customers (or number of accounts) for each conservation measure** by dividing the measure's projected customers (or accounts) who will implement the measure by the total service area customers. This factor is called the market penetration or installation rate.
4. **Estimate total annual average day water savings.** The water savings are computed by multiplying unit water savings per measure by the market saturation or installation rate (i.e., 10% to 90% of accounts) then multiplying by the number of units in the service area (i.e., dwelling units) targeted by a particular measure. The indoor and outdoor water savings are also calculated.

5. **Determine initial and annual costs to implement the measures** based upon pilot projects, local experience, and the costs of goods, services, and labor in the community. This is multiplied by the number of units participating each year then added to overall administration and promotion costs to arrive at a total measure cost, which may be spread over a number of years.
6. **Compare costs of measures** by computing the present value of costs and cost of water saved over the planning period.
7. **Compile three programmatic packages** or programs containing various new and existing measures.
8. **Evaluate the three programs for water savings and cost-effectiveness** and identify the point of diminishing returns from further investments in conservation.

For conservation measure evaluation, the DSS Model performs economic analysis by using net present value and benefit to cost ratio as economic indicators. The benefit-cost analysis is performed from various perspectives, including the utility and community (community perspective = utility plus customer). Figure 4-2 shows the structure of the model. Results are presented in subsequent sections.

Figure 4-2 Structure of the DSS Model



4.2 Screening of Measures

The review and screening of water conservation measures is an important step in updating the water conservation program. In this case, some of the measures reviewed have already been implemented by WCWCD and some would be new. The new measures were designed with an implementation schedule reflecting future dates in which WCWCD might begin such programs.

This task included a review of WCWCD's current water conservation measures, identification of current and new measures that may be appropriate for the local entities, and the screening of these measures to a short-list for detailed evaluation (benefit-cost analysis). To complete this process, a list of potential demand management measures for qualitative evaluation (screening) was compiled. This list includes devices or programs (e.g., new high efficiency toilets that would save water if installed) that can be used to achieve water conservation; methods through which the device or program will be implemented; and what distribution method or mechanism can be used to activate the device or program. The list of potential measures was drawn from the general experience of MWM and WCWCD as well as review of cutting edge conservation programs currently being implemented by other water agencies. A list of all the measures considered, including their preliminary measure descriptions and the screening process, can be found in Attachment B.

4.3 Conservation Measures Evaluated

Upon inspection of the overall measure screening evaluation list, 28 conservation measures were selected for evaluation in the DSS Model. These 28 measures are shown below, categorized as utility operations, education, incentives, or mandates.

Utility Operations

The following conservation measures affect utility operations:

- Real Water Loss Reduction
- Conservation Pricing

Education

The following conservation measures are considered educational:

- Single Family Water Surveys
- Public Information Program
- Irrigation Water Surveys (Water Checks)
- Xeriscape Demonstration Gardens
- Train Landscape Maintenance Workers
- CII Surveys
- Billing Report Educational Tool
- Water Budgeting/Monitoring
- Efficient Outdoor Use Education and Training Program

Incentives

The following conservation measures are considered incentives (involve providing devices, rebates, etc.):

- Financial Incentives for Irrigation Upgrades
- Smart Irrigation Controller Rebates
- Distribute Retrofit Kits
- Toilet Leak Detection
- High Efficiency Toilet Rebates
- Multifamily Washer Rebate
- Rotating Sprinkler Nozzle Rebates
- CII Rebates to Replace Inefficient Equipment
- Replace Spray Nozzles
- High Efficiency Urinal Rebate (<.5 gallon)
- Turf Removal
- Washer Rebates for High Efficiency Machines (SF)
- School Building Retrofit
- Mobile Home Park Submetering
- Install High Efficiency Fixtures in Government Buildings
- Install or Rebate High Efficiency Faucets

Mandates

The following conservation measure is mandated, involving a local ordinance to implement:

- Require Efficient Toilets and Urinals

4.4 Water Reduction Methodology

Each conservation measure targets a particular water use such as indoor single family water use. Targeted water uses are categorized by water user group and by end use. Targeted water user groups include single family residential, multifamily residential, commercial, industrial, and institutional (CII). Measures may apply to more than one water user group. Targeted end uses include indoor and outdoor use. The targeted water use is important to identify because the water savings are generated from reductions in water use for the targeted end use. For example, a residential retrofit conservation measure targets single family and multifamily residential indoor use and, in some cases, specifically shower use. When considering the water savings potential generated by a residential retrofit one considers the water saved by installing low-flow showerheads in single family and multifamily homes.

The market penetration goal for a measure is the extent to which the product or service related to the conservation measure occupies the potential market. In essence, the market penetration goal identifies how many programs (e.g., fixtures, rebates, surveys, etc.) the wholesale customer would have to offer or conduct over a period of time to reach its water savings goal for that conservation measure. This is often expressed in terms of the number of programs offered or conducted per year.

The potential for error in market penetration goal estimates for each measure can be significant because estimates are based on previous experience, chosen implementation methods, projected utility effort, and funds allocated to implement the measure. However, if the market penetration required to achieve specific water savings turns out to be more or less than predicted, adjustments to the implementation efforts can be made. Larger rebates or additional promotions are often used to increase the market penetration. The process is iterative to reflect actual conditions and helps to ensure that market penetration and needed savings are achieved regardless of future variances between estimates and actual conditions.

In contrast, market penetration for mandatory ordinances can be more predictable with the greatest potential for error occurring in implementing the ordinance change. For example, requiring dedicated irrigation meters for new accounts through an ordinance can assure an almost 100% market penetration for affected properties.

Water agencies are constantly analyzing and trying to determine how long it takes a measure to reach saturation. Baseline surveys are the best approach to having the most accurate information on market saturation. This was taken into account when analyzing individual conservation measures where best estimates were made. MWM was not provided with any baseline surveys for this analysis, but discussions were held with WCWCD regarding their best estimates of saturation for their service area.

4.5 Perspectives on Benefits and Costs

The determination of the economic feasibility of water conservation programs involves comparing the costs of the programs to the benefits provided. This analysis was performed using the DSS Model developed by MWM. The DSS Model calculates cost-effectiveness of conservation measure savings at the end-use level. For example, the model determines the amount of water a toilet rebate program saves in daily toilet use for each single family account. Additional detail on the DSS Model and assumptions can be found in Attachment A.

4.6 Present Value Parameters

The time value of money is explicitly considered. The value of all future costs and benefits is discounted to 2016 (the model start year) at the real interest rate of 3.01%. The DSS Model calculates this real interest rate, adjusting the current nominal interest rate (assumed to be approximately 6.1%) by the assumed rate of inflation (3.0%). Cash flows discounted in this manner are subsequently referred to as "Present Value" sums.

4.7 Measure Assumptions Including Unit Costs and Water Savings

Attachment C presents the assumptions and inputs used in WCWCD's DSS Model to evaluate each water conservation measure. Assumptions regarding the following variables were made for each measure:

- Targeted Water User Group End Use – Water user group (e.g., single family residential) and end use (e.g., indoor or outdoor water use).
- Utility Unit Cost – Cost of rebates, incentives, and contractors hired to implement measures. The assumed dollar values for the measure unit costs were closely reviewed by staff and found to be adequate for each individual measure. The values in the majority of cases are in the range of what is currently offered by other water utilities in the region.
- Retail Customer Unit Cost – Cost for implementing measures that is paid by retail customers (i.e., the remainder of a measure's cost that is not covered by a utility rebate or incentive).
- Utility Administration and Marketing Cost – The cost to the utility for administering the measure, including consultant contract administration, marketing, and participant tracking. The mark-up is sufficient (in total) to cover conservation staff time, general expenses, and overhead.

Costs are determined for each of the measures based on industry knowledge, past experience, and data provided by WCWCD. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the costs to staff the measures and to obtain and maintain equipment; and a one-time set-up cost. The set-up cost includes measure design by staff or consultants, any required pilot testing, and preparation of materials that are used in marketing the measure. Measure costs are estimated each year from 2016 to 2060. Costs are spread over the time period depending on the length of the implementation period for the measure and estimated voluntary customer participation levels.

Lost revenue due to reduced water sales is not included as a cost because the conservation measures evaluated herein generally take effect over a span of time that is sufficient to enable timely rate adjustments as necessary to meet fixed cost obligations.

Data necessary to forecast water savings of measures includes specific data on water use, demographics, market penetration, and unit water savings. Savings normally develop at a measured and predetermined pace, reaching full maturity after full market penetration is achieved. This may occur three to ten years after the start of implementation, depending upon the implementation schedule.

The unit costs vary according to the type of customer account and implementation method being addressed. For example, a measure might cost a different amount for a residential single family account, than a residential multifamily account, and for a rebate versus an ordinance requirement or a direct installation implementation method. Typically, water utilities have found there are increased costs associated with achieving higher market saturation, such as more surveys per year. The DSS Model calculates the annual costs based on the number of participants each year. The general formula for calculating annual utility costs is:

- Annual Utility Cost = Annual market penetration rate x total accounts in category x unit cost per account x (1+administration and marketing markup percentage)
- Annual Customer Cost = Annual number of participants x unit customer cost
- Annual Community Cost = Annual utility cost + annual customer cost

4.8 Assumptions about Avoided Costs

Future benefits from program water savings can be considered to be future costs that are avoided because the water conservation program makes these expenditures unnecessary or delayed in time (creating a savings in the present value of future costs). WCWCD is currently assuming an avoided cost of water of \$2,987/MG or \$973/AF. This value represents the estimated cost (per unit water) of M&I water delivered by the Lake Powell Pipeline, corrected for elimination of the Cedar Valley Pipeline and the large forebay reservoir at the top of the Hurricane Cliffs. This avoided cost of water value is indexed to the second quarter of year 2015. Changing the avoided costs would alter estimated benefits (from the avoided costs). However, changing avoided costs would not change the relative differences between measure results. Therefore, doing so would not necessarily lead to different planning decisions.

The Modified Draft Socioeconomics and Water Resource Economics Study Report (UBWR, February 2012) documented the present value of the Lake Powell Pipeline Project (Project) capital construction cost opinion as \$1,124,717,000. This present value capital construction cost opinion was computed based on the following assumptions:

- Project present value (PV) at 2010 dollars start of engineering-construction period incorporates a 4.14 percent discount/interest rate.
- The Project PV period starts in 2010; all values used between 2008 and 2010 are escalated annually at 3 percent (includes inflation). Annual inflation after 2010 is 2.5 percent (in real value terms).
- The Project PV period covers 2010 through 2060, with Project operations commencing in 2020 (project life-cycle/operations approach); project power operations are considered at maximum operation in 2042.
- The Project PV period benefits and costs are expressed in real (constant) 2010\$.
- The Project construction period is 2016-2019, with Project operations commencing in 2020. No interest during construction is included, to be consistent with the State of Utah's perspective on economic and financial analyses. The State of Utah does not consider deferred revenues during the construction period as affecting their interest payments on general obligation bond requirements.
- Field Costs During Construction include a 15 percent contingency.
- Non-Construction Contract Costs are 18 percent of Field Costs During Construction.

The present value at 2010\$ of the capital construction cost opinion included several elements of the project that have been changed since 2010. The Cedar Valley Pipeline System was eliminated from the Project in mid-2012 when Central Iron County Water Conservancy District withdrew from the Lake Powell Pipeline. Washington County Water Conservancy District (WCWCD) requested that the Project include a large forebay reservoir east of the Hurricane Cliffs because of needed water storage. A portion of the Water Conveyance System and the Hydro System near the topographical high point in elevation was re-aligned parallel with U.S. 89 and within the Congressionally-designated utility corridor through the Grand Staircase-Escalante National Monument. The Kaibab Band of Paiute Indians purchased a section of land south of the Kaibab-Paiute Indian Reservation that included the Proposed Action (South Alignment Alternative), which was subsequently re-aligned around the subject section.

The December 2009 capital construction cost opinion is more than five years old and has progressively less accuracy with increasing time. The present value of the 2015 capital construction cost has been calculated using an index value through the second quarter of 2015. Although indexing the December 2009 capital construction cost opinion, corrected for the Project changes since 2009, is accompanied by decreasing accuracy, the intended purpose of this present value capital cost opinion is appropriate for the intended avoided cost comparison with water conservation measures in the

Water Conservation Update. The second quarter 2015 present value capital construction cost opinion, in 2010\$ indexed to 2015\$, is \$1,151,000,000. The estimated cost of delivered municipal and industrial water in dollar per acre-foot indexed to the second quarter 2015 is \$973 per acre-foot. This value is recommended as the updated 2015 avoided cost for comparison with the cost of water conservation measures in the Updated Water Conservation Analysis. An updated capital construction cost opinion for the Project will be completed during fall 2015 and available for incorporation into the Updated Water Conservation Analysis as applicable.

5. MODELING RESULTS

5.1 Comparison of Individual Measures

A total of 28 individual measures were evaluated using the DSS Model. For each measure selected to be modeled, a description as well as details on each measure's utility and customer costs, time period, and targets are presented. Screen shots from the DSS Model can be found in Attachment C. Some of the key assumptions used in evaluating the water savings, benefits, and costs include the following:

- Applicable customer class
- Applicable end use
- Annual account participation rates
- Evaluation start and end year
- Program length, years
- Measure life, years
- Utility unit cost, \$
- Customer unit cost, \$
- Annual administration and marketing overhead

Table 5-1 presents a list of all 28 measures and the following benefit-cost analysis parameters:

- Present Value of Water Utility Benefits
- Present Value of Community Benefits
- Present Value of Water Utility Costs
- Present Value of Community Costs
- Water Utility Benefit to Cost Ratio
- Community Benefit to Cost Ratio
- First Five Years of Water Utility Costs 2016-2020
- Water Savings in 2025 and 2060 (mgd)
- Cost of Savings per Unit Volume (\$/MG)

Table 5-1 presents how much water the measures will save in 2025 and 2060, how much they will cost, and what the cost of saved water will be per unit volume if the measures are implemented on a stand-alone basis (i.e., without interaction or overlap from other measures that might address the same end use or uses). Thus, savings from measures which address the same end use(s) are not additive. The model uses impact factors to avoid double counting in estimating the water savings from programs of measures. For example, if two measures are planned to address the same end use and both save 10% of the prior water use then the net effect is not the simple sum of 20%. Rather, it is the cumulative impact of the first measure reducing the use to 90% of what it was without the first measure in place, then reducing the use another 10% to result in the net use being 81% of what it was originally. In this example, the net savings is 19%, not 20%. Using impact factors, the model computes the reduction as follows, $0.9 \times 0.9 = 0.81$ or 19% water savings.

Since interaction between measures has **not** been accounted for in Table 5-1, it is **not** appropriate to include totals at the bottom of the table. However, the table is useful to give a close approximation of the cost-effectiveness of each individual measure.

Cost categories are defined below:

- Utility Costs – Those costs that WCWCD as a water utility will incur to operate the measure, including administrative costs.
- Utility Benefits – The avoided cost of producing water.
- Customer Costs – Those costs customers will incur to implement a measure in WCWCD's service area and maintain its effectiveness over the life of the measure.
- Customer Benefits – The savings other than from reduced water/sewer utility bills, such as energy savings resulting from reduced use of hot water. Conservation program participants will see lower water and sewer bills, but overall there will be no net customer benefit.

- Community Costs and Benefits – Community Costs include Utility Costs plus Customer Costs, Community Benefits include Utility Benefits plus Customer Benefits.

The column headings in Table 5-1 are defined as follows:

- Water Savings in years 2025 and 2060 (MGY) = water saved in million gallons per year. The year 2060 is provided as helpful in relation to the goal of achieving a 35% reduction in 2000 total usage by year 2060.
- Present Value (PV) of Utility and Community Costs and Benefits (\$) = present value (PV) of the 45-year time stream of annual costs or benefits, discounted to the base year.
- Utility Benefit-Cost ratio = PV of Utility Costs divided by PV of Utility Benefits over 45 years.
- Community Benefit-Cost ratio = (PV of Utility Benefits plus PV of customer energy savings) divided by (sum of PV of Utility Costs plus PV of Customer Costs), over 45 years.
- Five Years Total Cost to Utility (\$) = sum of the annual Utility Costs for years 2016 through year 2020 (up to year 2021). The measures start in the years specified for each measure shown in Attachment C.
- Utility Cost of Water Saved per Unit Volume (\$/MG) = PV of Utility Costs over 45 years divided by the 45-Year Water Savings. This value is compared to the utility's avoided cost of water as one indicator of the cost-effectiveness of conservation efforts. It should be noted that the value somewhat undervalues the cost of savings because program costs are discounted to present value and the water benefit is not.

From Table 5-1, the following observations can be made:

- There is a considerable range in savings for the various measures - from very small savings of 1 MG to well over 500 MG in year 2025, and from 0 MG to over 1,860 MG in 2060. The zero savings indicates there are measures no longer being implemented and/or no longer exacting any residual water savings.
- 26 of all the measures are cost-effective (BC ratio > 1.0) from the utility perspective.
- 23 of all 28 measures are cost-effective (BC ratio > 1.0) from the community perspective.
- Many of the measures with the highest water savings target landscape water use.
- Measures that target or apply to new homes save more water than measures that target existing customers because of the relatively high planned growth for the service area.
- Three of the top five water saving measures in year 2025 (first column of Table 5-1) are existing measures or a modification of an existing measure (all save more than 100 MG in 2025):
 1. Real Water Loss Reduction (existing measure)
 2. Conservation Pricing (existing measure)
 3. Billing Report Educational Tool (proposed measure)
 4. Require Efficient Toilets and Urinals (new proposed ordinance)
 5. Smart Irrigation Controller Rebates (existing measure)
- The three most expensive measures for the utility (last column in Table 5-1) over the first five years of the study period are:
 1. Financial Incentives for Irrigation Upgrades
 2. Turf Removal
 3. Real Water Loss Reduction

Table 5-1 Summary of Conservation Program Measures Benefit Cost Analysis*

Measure	2025 Water Savings (MG)	2060 Water Savings (MG)	Present Value of Water Utility Benefits	Present Value of Water Utility Costs	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio	Five Years of Water Utility Costs (2016-2021)	Cost of Savings per Unit Volume (\$/MG)
Financial Incentives for Irrigation Upgrades	104	171	\$ 9,460,106	\$ 9,460,106	2.0	1.3	\$ 1,584,458	\$ 723
Smart Irrigation Controller Rebates	109	180	\$ 9,919,020	\$ 9,919,020	5.3	3.0	\$ 639,834	\$ 278
Distribute Retrofit Kits	7.8	0	\$ 176,546	\$ 499,116	2.2	3.4	\$ 42,709	\$ 1,138
Toilet Leak Detection	3.96	0.0	\$ 90,723	\$ 90,723	3.0	0.6	\$ 15,717	\$ 817
High Efficiency Toilets (HET) Rebates	54	44	\$ 3,142,175	\$ 3,142,175	3.1	2.1	\$ 520,275	\$ 502
Single Family Water Surveys	42	108	\$ 4,040,063	\$ 4,040,063	1.8	1.7	\$ 256,253	\$ 770
Multifamily Washer Rebate	2.2	2.0	\$ 141,047	\$ 515,014	1.2	2.1	\$ 49,150	\$ 1,279
Public Information Program	65	154	\$ 6,339,244	\$ 11,280,182	2.0	3.5	\$ 375,838	\$ 746
Conservation Pricing	239	1,869	\$ 3,152,072	\$ 3,152,073	6.7	6.7	\$ 50,000	\$ 13
Rotating Sprinkler Nozzle Rebates	69	114	\$ 6,306,738	\$ 6,306,738	5.2	4.4	\$ 413,418	\$ 283
CII Rebates to Replace Inefficient Equipment	12	19	\$ 1,056,436	\$ 2,829,675	1.3	2.6	\$ 271,925	\$ 1,113
Replace Spray Nozzles	1.2	1.2	\$ 85,151	\$ 548,565	6.3	40.7	\$ 14,335	\$ 256
High Efficiency Urinal Rebate (<.5 gallon)	1.9	1.4	\$ 106,156	\$ 106,156	0.3	0.1	\$ 209,173	\$ 6,016
Irrigation Water Surveys (Water Checks)	7	18	\$ 731,610	\$ 731,610	1.5	1.0	\$ 56,277	\$ 957
Xeriscape Demonstration Gardens	22	56	\$ 2,019,370	\$ 2,019,370	0.9	0.3	\$ 270,603	\$ 1,599
Train Landscape Maintenance Workers	6	15	\$ 596,596	\$ 596,596	3.6	0.8	\$ 19,069	\$ 393
Real Water Loss Reduction	547	1,326	\$ 48,857,485	\$ 48,857,485	6.9	6.9	\$ 1,460,834	\$ 202

Measure	2025 Water Savings (MG)	2060 Water Savings (MG)	Present Value of Water Utility Benefits	Present Value of Water Utility Costs	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio	Five Years of Water Utility Costs (2016-2021)	Cost of Savings per Unit Volume (\$/MG)
Turf Removal	92	152	\$ 8,408,983	\$ 8,408,983	1.8	1.0	\$ 1,570,874	\$ 806
Washer Rebates for High Efficiency Machines	15	14	\$ 950,978	\$ 3,472,380	1.2	1.4	\$ 355,337	\$ 1,371
CII Surveys	34	55	\$ 3,082,987	\$ 5,447,304	5.1	5.0	\$ 209,173	\$ 293
School Building Retrofit	11	11	\$ 655,303	\$ 1,104,664	12.1	8.1	\$ 28,139	\$ 127
Billing Report Educational Tool	196	462	\$ 19,017,732	\$ 33,840,545	4.1	7.3	\$ 541,206	\$ 358
Mobile Home Park Submetering	5	5	\$ 351,864	\$ 709,010	7.9	6.1	\$ 39,383	\$ 204
Install High Efficiency Fixtures in Government Buildings	8	8	\$ 498,467	\$ 894,272	6.3	4.1	\$ 41,486	\$ 246
Install or Rebate High Efficiency Faucets	7	11	\$ 613,522	\$ 1,170,018	2.0	2.1	\$ 104,587	\$ 735
Water Budgeting/Monitoring	18	30	\$ 1,653,582	\$ 1,653,582	27.1	9.0	\$ 20,917	\$ 55
Require Efficient Toilets and Urinals	146	724	\$ 20,822,231	\$ 27,718,495	9.6	1.0	\$ 316,271	\$ 136
Efficient Outdoor Use Education and Training Program	25	65	\$ 2,318,596	\$ 2,318,596	5.7	3.2	\$ 47,293	\$ 243

Note: Savings estimates of 0 indicate the measure is not implemented in the respective year and/or no longer executes residual savings from previous year implementation (the measure savings life is complete and savings are no longer coming from the measure).

5.2 Program Scenarios

Assessing all 28 analyzed measures, WCWCD staff and consultants assembled three potential conservation programs for consideration. Figure 5-1 provides a summary of which measures are included in each of the three programs. The three programs are designed to illustrate an increasing level of water savings for WCWCD, with the third level (Program C) representing the maximum theoretical level of water savings. The decision regarding which measures belong in each program was reviewed and finalized by WCWCD. These programs are not intended to be rigid programs, but rather to demonstrate the range in savings that could be generated if selected measures are run together. In this step, a percent overlap in water savings (and benefits) is accounted for and a combined savings and benefits from programs or packages of measures is estimated. Figure 5-1 displays the conservation program scenarios considered in the DSS Model along with their corresponding measures.

Program A – Similar to existing conservation program; includes 18 conservation measures.

Program B – Optimized to increase water savings and be cost-effective. Consists of all of Program A’s measures plus added new measures. Includes 23 conservation measures.

Program C – All 28 conservation program measures analyzed are included in Program C.

Figure 5-1 Program Scenario Measures

 Program Scenarios	Measures	Program A	Program B	Program C
	Financial Incentives for Irrigation Upgrades	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Smart Irrigation Controller Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Distribute Retrofit Kits	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Toilet Leak Detection	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High Efficiency Toilets (HET) Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Single Family Water Surveys	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Multifamily Washer Rebate	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Public Information Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Conservation Pricing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Rotating Sprinkler Nozzle Rebates	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CII Rebates to Replace Inefficient Equipment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Replace Spray Nozzles	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High Efficiency Urinal Rebate (<.5 gallon)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Irrigation Water Surveys (Water Checks)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Xeriscape Demonstration Gardens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Train Landscape Maintenance Workers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Real Water Loss Reduction	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Turf Removal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Washer Rebates for High Efficiency Machines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CII Surveys	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
School Building Retrofit	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Billing Report Educational Tool	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mobile Home Park Submetering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Install High Efficiency Fixtures in Government Buildings	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Install or Rebate High Efficiency Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water Budgeting/ Monitoring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Require Efficient Toilets and Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Efficient Outdoor Use Education and Training Program	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5.3 Modeling Results

The following Table 5-2 presents each modeled conservation program's present value of water savings, present value of utility and community costs, cost of savings per unit volume, and both the water utility and community benefit to cost ratios.

Table 5-2 Conservation Program Comparison

Conservation Program	Present Value of Water Savings	Present Value of Utility Costs	Present Value of Community Costs	Utility Cost of Water Saved (\$/MG)*	Community Cost of Water Saved (\$/MG)*	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Program A with Plumbing Code	\$133,889,976	\$26,500,720	\$38,589,697	\$270/MG	\$393/MG	5.1	3.7
Program B with Plumbing Code	\$155,723,518	\$31,960,615	\$44,881,264	\$283/MG	\$397/MG	4.9	4.0
Program C with Plumbing Code	\$182,476,548	\$39,887,538	\$83,589,546	\$301/MG	\$630/MG	4.6	2.6

* Cost of water saved per unit volume = present value of costs (utility or community) divided by program water savings. Costs and savings are for the analysis period (years 2016-2060).

The following Table 5-3 presents each modeled conservation program's long term water savings as well as year 2060 indoor and outdoor water savings.

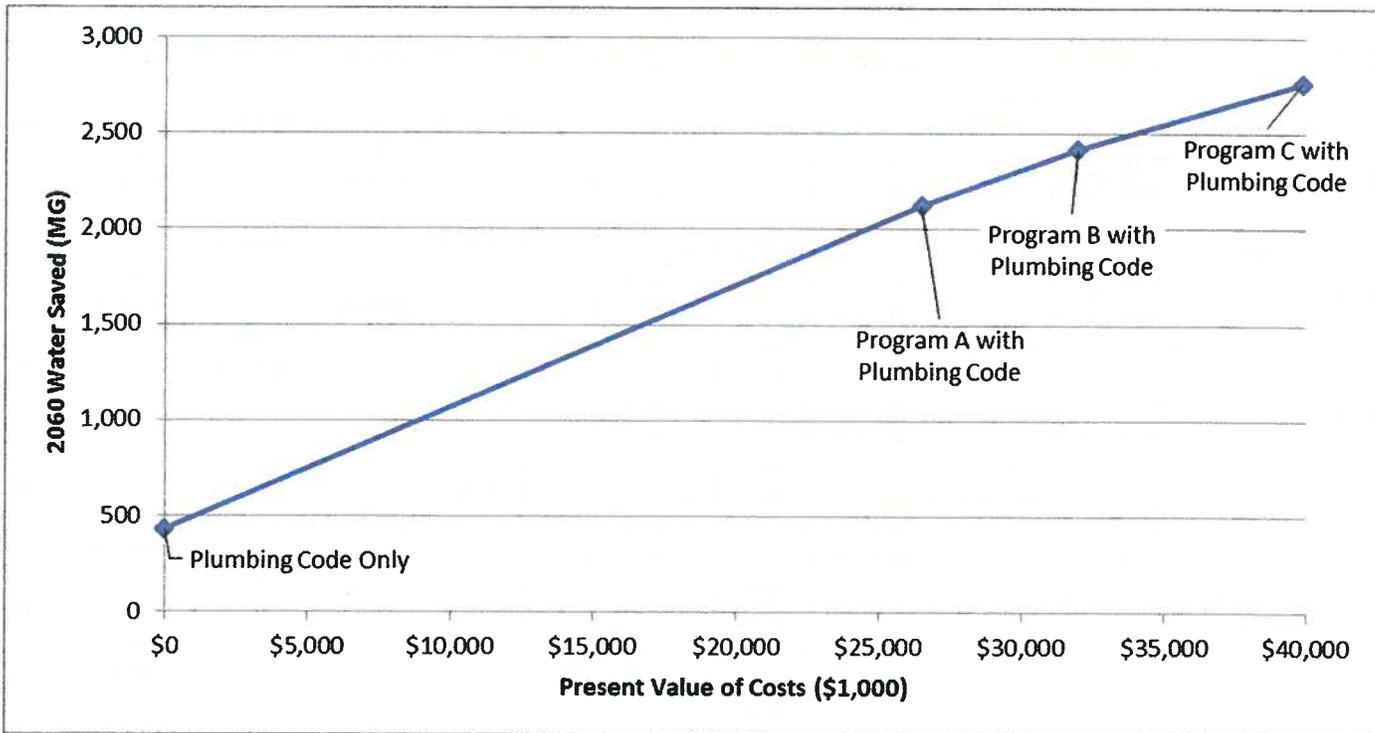
- The plumbing code reduces water production 0.8% in 2025.
- Program A savings are 4.6% or, including the plumbing code, 5.4% in year 2025. (4.6% Program A + Plumbing Code 0.8% = year 2025 Total Savings of 5.4%)
- Program B savings are 5.4% or, including the plumbing code, 6.2% in year 2025 (5.4% Program A + Plumbing Code 0.8% = Total Savings 6.2%)
- Program C savings are 6.2% or, including the plumbing code, 7.0% in year 2025. (6.2% Program A + Plumbing Code 0.8% = Total Savings 7.0% in year 2025)
- The plumbing code reduces water production 3.3% in 2060.
- Program A savings are 6.1% or, including the plumbing code, 9.4% in year 2060. (6.1% Program A + Plumbing Code 3.3% = year 2060 Total Savings of 9.4%)
- Program B savings are 6.9% or, including the plumbing code, 10.1% in year 2060 (6.9% Program A + Plumbing Code 3.3% = Total Savings of 10.1% in year 2060)
- Program C savings are 8.0% or, including the plumbing code, 11.3% in year 2060. (8.0% Program A + Plumbing Code 3.3% = Total Savings 11.3% in year 2060)

Table 5-3 Conservation Program Long Term Water Savings

Water Savings (MGY)	2020	2025	2030	2040	2050	2060	Year 2060 Indoor Water Savings	Year 2060 Outdoor Water Savings
Plumbing Code	54	218	433	909	1,473	2,158	2,158	0
Program A with Plumbing Code	643	1,477	2,124	3,245	4,590	6,199	166	6,033
Program B with Plumbing Code	816	1,711	2,414	3,598	5,013	6,697	399	6,298
Program C with Plumbing Code	923	1,939	2,763	4,084	5,643	7,476	1,093	6,383

The following Figure 5-2 displays each conservation program's utility cost versus savings.

Figure 5-2 Conservation Program Costs versus Savings



Program A reflects continuing the current program plus the plumbing code. The additional measures that create programs B and C produce increasing incremental costs for the amount of water savings gained. In other words, there are apparent diminishing returns when measures are added to each program beyond Program B. That is not to say that extending the water savings to Program C, the theoretical maximum determined in the study, is a poor investment. Whether it is economical to spend the extra money depends on the cost of the other options to obtain additional water for the WCWCD area, if needed.

The projected GPCD to 2060 is displayed in Table 5-4 and Figure 5-3. GPCD percent (%) reductions from year 2000 water use are presented Table 5-5.

Table 5-4 Conservation Program Projected GPCD to Year 2060

Year	No Conservation	Plumbing Code Only	Program A with Plumbing Code	Program B with Plumbing Code	Program C with Plumbing Code
2000	439	439	439	439	439
2010	325	325	325	325	325
2020	317	316	308	306	304
2025	317	315	300	298	295
2030	317	313	296	294	290
2040	317	310	293	291	287
2050	317	309	290	288	284
2060	317	307	288	285	282

Figure 5-3 Conservation Program Projected GPCD to Year 2060

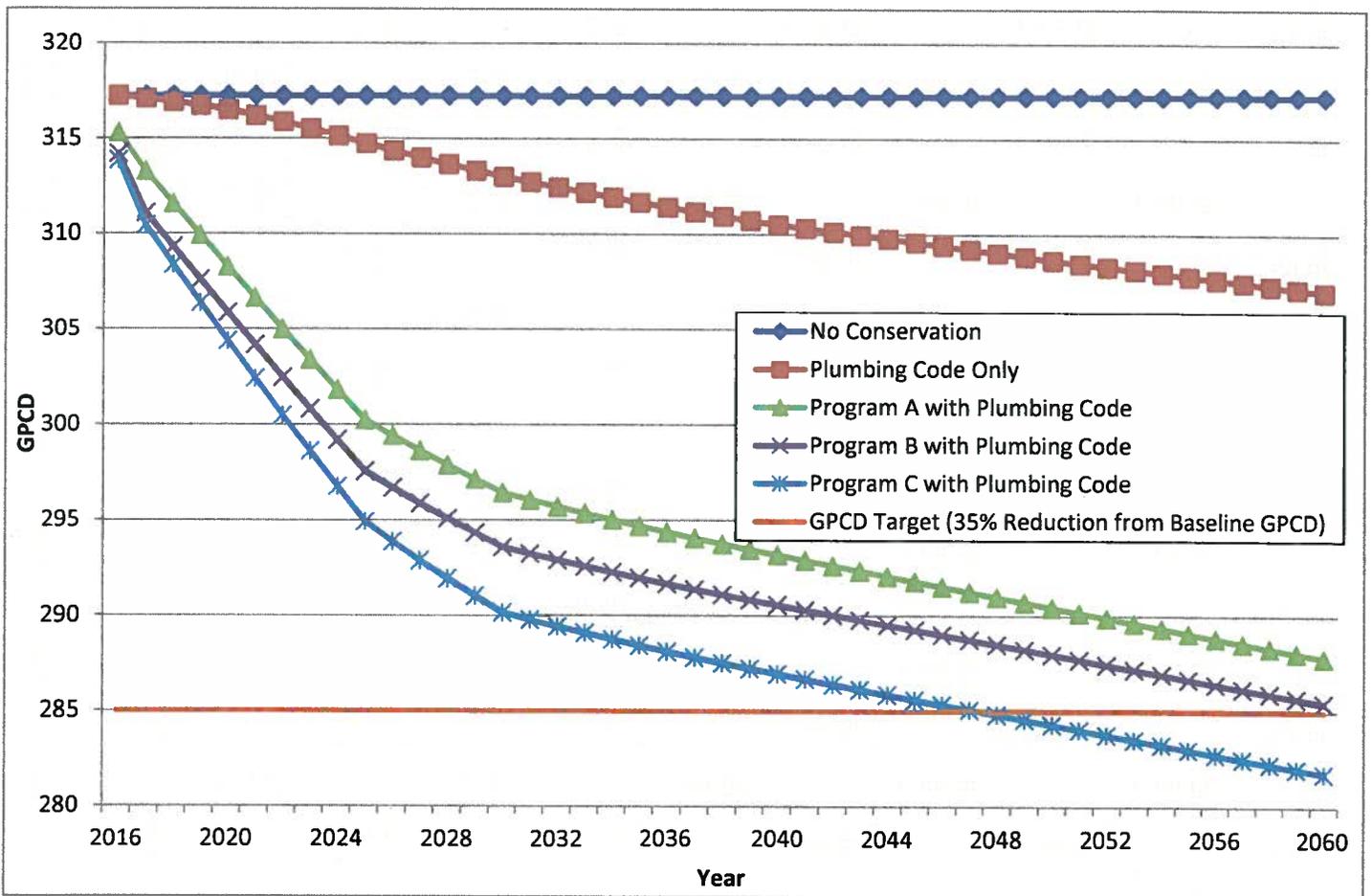


Table 5-5 Conservation Program Projected GPCD Reduction Percentage to Year 2060

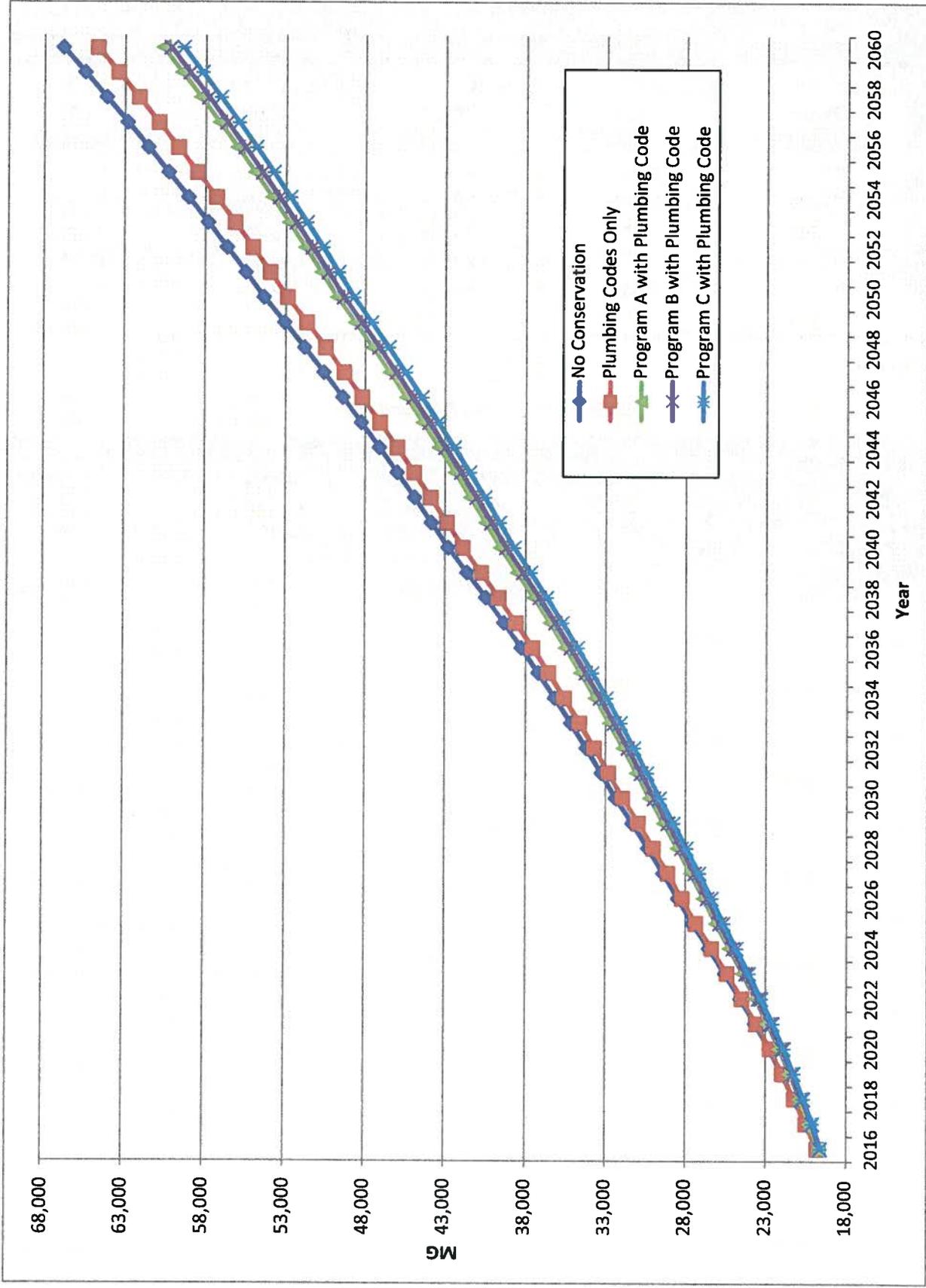
Year	No Conservation	Plumbing Code Only	Program A with Plumbing Code	Program B with Plumbing Code	Program C with Plumbing Code
2000	baseline	baseline	baseline	baseline	baseline
2010	26.0%	26.0%	26.0%	26.0%	26.0%
2020	27.7%	27.9%	29.8%	30.3%	30.7%
2025	27.7%	28.3%	31.6%	32.2%	32.8%
2030	27.7%	28.7%	32.5%	33.1%	33.9%
2040	27.7%	29.3%	33.2%	33.8%	34.6%
2050	27.7%	29.7%	33.8%	34.4%	35.2%
2060	27.7%	30.1%	34.4%	35.0%	35.8%

WCWCD projected demand to 2060 with and without plumbing codes and active conservation programs is displayed in Table 5-6 and Figure 5-4.

Table 5-6 Projected Demand

Demand (MGY)	2020	2025	2030	2040	2050	2060
No Conservation	22,766	27,563	32,359	42,799	54,342	66,840
Plumbing Code Only	22,712	27,345	31,926	41,890	52,870	64,682
Program A with Plumbing Codes	22,123	26,086	30,236	39,554	49,753	60,641
Program B with Plumbing Codes	21,950	25,852	29,945	39,201	49,329	60,143
Program C with Plumbing Codes	21,843	25,624	29,596	38,715	48,700	59,364

Figure 5-4 Water Demand Projections



6. CONCLUSIONS

The WCWCD service area has a relatively high portion of residential water use and a significant amount of outdoor water use. Consequently, residential conservation programs produce the most savings. WCWCD's service area is not a heavy manufacturing sector, so the conservation potential in the commercial sector is relatively low. The amount of new growth forecasted for WCWCD's area is high, so measures directed at new development produce large savings. Because of the high avoided cost of new water, water conservation programs are very cost-effective.

Overall conclusions are as follows:

- Total savings from Program A + Plumbing Code (continuing the current program) would save approximately 9% of demand in 2060 (6,199 MG), as shown in Table 5-3.
- The maximum savings would be that of Program C + Plumbing Code or 7,476 MG in 2060. This equates to an 11% reduction in 2060 water demand, as shown in Table 5-3.
- The average cost of water saved to the utility (present value basis) for all programs ranges from a very attractive \$270/MG to \$301/MG (less than the \$2,987/MG projected price of Lake Powell water to Washington County), as shown in Table 5-2.
- WCWCD achieves the State of Utah's goal of a 35% reduction of year 2000 water use by 2060 with Program B and by 2049 with Program C. Program A does not support WCWCD achieving the 35% goal by year 2060. All of these programs are cost effective from the utility standpoint, as shown in Table 5-2
- Program B appears to optimize the investment in water conservation whose costs and savings are at the point of increasing diminishing returns, as seen in Figure 5-2. Program B is also sufficient to meet the State's goal of a 35% reduction in per capita water use, given the historical savings that have already been achieved.
- Program B is a cost effective way to meet a small part of the growth in demand. Growth in demand without any conservation is projected to be approximately 47,000 MGY. Program B water savings could provide 14% of that projected amount. Therefore, other sources of new water will be needed to meet projected demand in 2060.
- Because of the projected relatively high growth rate in new accounts, implementation of all of the programs described in this report will save approximately 35% of the amount of new water needed in 2060. Water conservation can be an important approach to meeting future demands in the service area.

In summary, this analysis shows that WCWCD's goal to achieve an additional approximate 10% reduction in total per capita usage from 2000 baseline levels (for a total of 35% reduction) by 2060 is attainable. These reductions can be achieved with plumbing codes, the current conservation program, and implementation of more aggressive conservation measures identified in Program B and Program C scenarios.

ATTACHMENT A DSS MODEL BACKGROUND

The Demand Side Management Least Cost Planning Decision Support System (DSS Model) prepares long-range water demand projections at a very detailed level. The purpose of the model is to enable a more accurate assessment of the impact of water efficiency programs on demand. A rigorous modeling approach is especially important if the project will be subject to regulatory or environmental review.

The DSS Model is an end-use model which shows water demand in the service area as it relates to specific end water uses, such as toilets, faucets, or irrigation. The product is a “bottom-up” approach that allows for detailed criteria to be considered when estimating future demands, such as the effects of natural fixture replacement, plumbing codes, and conservation efforts.

To forecast urban water demands using the DSS Model, customer water use data, as provided in the form of billing data from the various retail water providers, was obtained from WCWCD regional partners to be modeled. The demand data is reconciled with available demographic data to characterize the water usage for each customer category in terms of number of users per account and per capita water use. The data is further analyzed to approximate the split of indoor and outdoor water usage in each customer category. The indoor/outdoor water usage is further divided into typical end uses for each customer category. Published data on average per capita indoor water use and average per capita end use are combined with the number of water users to calibrate the volume of water allocated to specific end uses in each customer category. In other words, the DSS Model checks that social norms from studies on end water use behavior (e.g., flushes per person per day) are not exceeded.



Figure A-1 DSS Model Screen Shot

The DSS Model evaluates conservation measures using benefit-cost analysis with the present value of the cost of water saved (\$/MG) and benefit to cost ratio as economic indicators. The analysis is performed from both the utility and community (utility plus customer) perspectives. Benefits are based on savings in water and wastewater facility operations and maintenance (O&M) and savings from deferring or downsizing future capital facilities, such as water treatment plant expansions, new source development, or water purchases from wholesalers. Figure A-1 above presents the steps that illustrate the process for forecasting conservation water savings, including the impacts of fixture replacement due to plumbing codes and standards already in place.

The DSS Model has been used for practical applications of conservation planning in over 230 service areas representing 20 million people, including extensive efforts nationally in California, Colorado, Hawaii, Utah, Georgia, Florida, North Carolina, Oregon and Ohio, and internationally in Australia, New Zealand, and Canada.

The following section presents the key assumptions used in the DSS Model. The assumptions having the most dramatic effect on future demands are: 1) the natural replacement rate of fixtures; 2) how residential or commercial future use is

projected; and 3) the percent of estimated real water losses. This section presents DSS Model assumptions regarding plumbing code water savings, present value parameters, and active conservation measure costs and savings.

A.1 Plumbing Codes and Legislation

The DSS Model incorporates the following three items as a “code” meaning that the savings are assumed to occur and are therefore “passive” savings.

National Plumbing Code

The Federal Energy Policy Act of 1992, as amended in 2005, mandates that only fixtures meeting the following standards can be installed in new buildings:

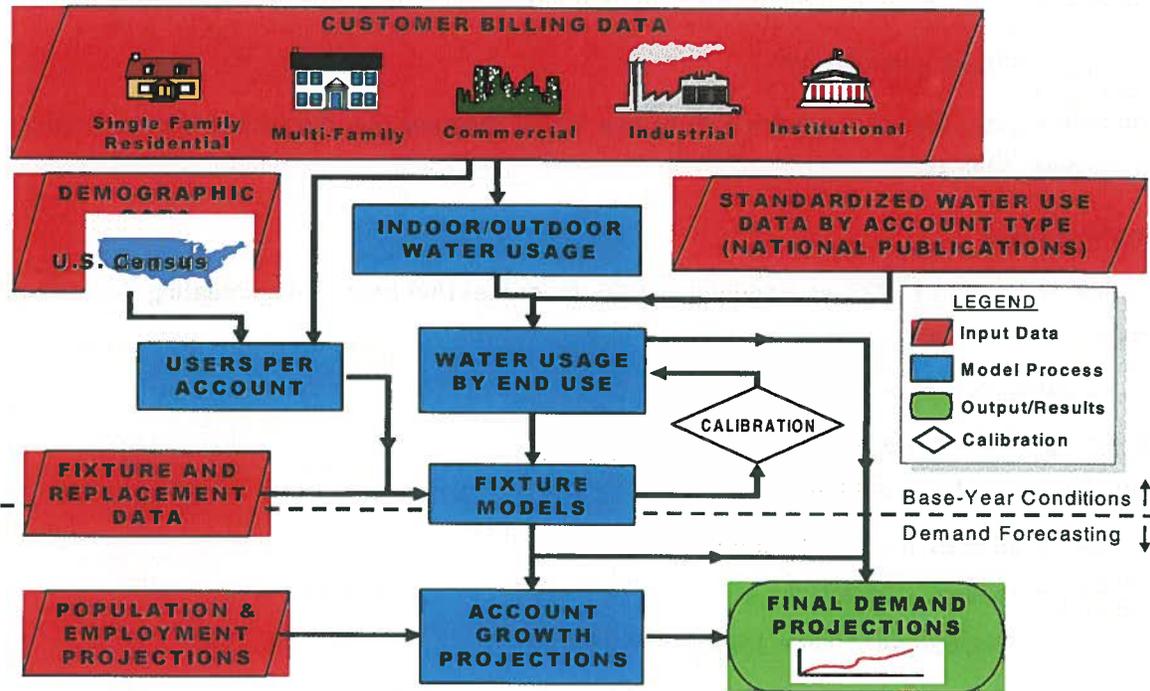
- Toilet – 1.6 gal/flush maximum
- Urinals – 1.0 gal/flush maximum
- Showerhead – 2.5 gal/min at 80 psi
- Residential faucets – 2.2 gal/min at 60 psi
- Public restroom faucets – 0.5 gal/min at 60 psi
- Dishwashing pre-rinse spray valves – 1.6 gal/min at 60 psi

Replacement of fixtures in existing buildings is also governed by the Federal Energy Policy Act, which mandates that only devices with the specified level of efficiency (as shown above) can be sold as of 2006. The net result of the plumbing code is that new buildings will have more efficient fixtures and old inefficient fixtures will slowly be replaced with new, more efficient models. The national plumbing code is an important piece of legislation and must be carefully taken into consideration when analyzing the overall water efficiency of a service area.

In addition to the plumbing code, the U.S. Department of Energy regulates appliances, such as residential clothes washers. Regulations to make these appliances more energy efficient have driven manufactures to dramatically reduce the amount of water these machines use. Generally, front loading washing machines use 30-50% less water than conventional models (which are still available). In a typical analysis, the DSS Model forecasts a gradual transition to high efficiency clothes washers (using 12 gallons or less) so that by the year 2025 that will be the only type of machines available for purchase. In addition to the industry becoming more efficient, rebate programs for washers have been successful in encouraging customers to buy more water efficient models. Given that machines last about 10 years, eventually all machines on the market will be the more water efficient models. In 2012, the United States Environmental Protection Agency estimated that the Energy Star clothes washer market share in the U.S. in 2011 was more than 60%. Energy Star washing machines have a water factor (WF) of 6.0 or less. A WF of 6.0 is the equivalent of using 3.1 cubic feet (or 23.2 gallons) of water per load.

The following figure conceptually describes how plumbing codes are incorporated into the flow of information in the DSS Model.

Figure A-2 DSS Model Overview Used to Make Potable Water Demand Projections



DSS Model Fixture Replacement

The DSS Model is capable of modeling multiple types of fixtures, including fixtures with slightly different design standards. For example, currently toilets can be purchased that flush at a rate of 0.8 gallons per flush (gpf), 1.0 gallon per flush or 1.28 gallons per flush. The 1.6 gpf and higher gallons per flush toilets still exist but can no longer be purchased in California. Therefore, they cannot be used for replacement or new installation of a toilet. So, the DSS Model utilizes a fixture replacement table to decide what type of fixture should be installed when a fixture is replaced or a new fixture is installed. The replacement of the fixtures is listed as a percentage, as shown in the following figure. A value of 100% would indicate that all the toilets sold would be of one particular flush volume. A value of 75% means that three out of every four toilets installed would be of that particular flush volume type. The DSS Model contains a pair of replacement tables for each fixture type and customer category combination (i.e., Residential Single Family toilets, Residential Multifamily toilets, Commercial toilets, Residential clothes washing machines, Commercial washing machines, etc.).

In this example, the DSS Model includes the effects of the Federal Policy Act on each toilet fixture type. This DSS Model feature determines the "saturation" of 1.6 gpf toilets as the Federal Policy Act was in effect from 1992-2014 for 1.6 gpf toilet replacements.

Figure A-3. Example Toilet Replacement Percentages by Type of Toilet

Replacement Appliance Market Shares				
Year	1.28 gpf HET	1.6 gpf ULFT	High Use Toilet	Total
2012	75%	25%	0%	100%
2014	100%	0%	0%	100%
2020	100%	0%	0%	100%
2030	100%	0%	0%	100%
2050	100%	0%	0%	100%

New Appliance Market Shares				
Year	1.28 gpf HET	1.6 gpf ULFT	High Use Toilet	Total
2012	100%	0%	0%	100%
2014	100%	0%	0%	100%
2020	100%	0%	0%	100%
2030	100%	0%	0%	100%
2050	100%	0%	0%	100%

DSS Model Initial Fixture Proportions

The DSS Model also needs a place to start when it comes to fixture replacement. It needs to know what the initial proportions (or percentages) of each type of fixture that is currently installed (i.e., fixture saturation rate) in the modeled service area for each customer class.

Figure A-3 presents an example of the initial proportions determined for residential toilets in the year 2010. In the following example in Figure A-3, the model started in 2010. Therefore, it is assumed the initial proportions of the 1.28 gallon per flush type toilet is 0%, as that type was not readily available at that time. Then, using the 2010 DP-04 census data, which shows the age of houses in the service area, it is calculated that 39.3% of the total current homes were built since 1992 when 1.6 gallon per flush toilets were required to be installed in new homes. Then an average natural replacement rate (rate of broken or remodeled toilet) of 2.5% per year for higher flush volume toilets is assumed. Then, in this example, a 3.96% replacement rate is calculated due to a rebate program that was raising the replacement rate of toilets. This gives the initial proportion of 1.6 gallon per flush (gpf) toilets to be 90.0%, and 1.28 gpf toilets 3.3%. In this case the initial proportion of high flush toilets is assumed to be the remainder of 6.7%. This figure shows an example of a toilet fixture model and how it incorporates the changes from each of these legislative items. There are similar fixture models for showers, clothes washers, and urinals. There is one fixture model for each of the following categories:

- Single family toilets
- Multifamily toilets
- Commercial toilets
- Commercial urinals
- Single family showers
- Multifamily showers
- Single family clothes washers
- Multifamily clothes washers

Figure A-4. Example Residential Toilet Initial Proportions from Fixture Analysis used for DSS Fixture Model

Residential		Toilets				Replacement Data	
Fixture Model: Appliance Data	Volume per Use (Gallons) ¹	Proportion of Homes by Age ²	Net Change due to Natural Replacement	Net Change due to Rebate Program ³	Initial Proportions ⁴	Comments	Percent Annual Replacement ⁵
1.28 gal/flush High Efficiency Toilets (HET)	1.3	0.0%	0.0%	3.30%	3.3%	3.4% as these toilets were not very prevalent in the start year. 39.3% new homes since 1990 + 50% natural replacement +15% retrofit program	2.0%
1.6 gal/flush Ultra Low Flow Toilets (ULFT)	1.8	39.3%	50.0%	0.66%	90.0%		2.0%
High Flush and 3.5 gal/flush	4.0	60.7%	-50.00%	-3.96%	6.7%	Remainder	2.5%

NOTES:

- 1a. Volumes-per-use are based on average flush volumes for age of toilet. New toilets when out of adjustment flush at an average of 1.8 gpf instead of 1.6 gpf.
- 1b. Initial proportions of fixtures installed in homes are based on the age of homes as provided in the 2010 Census.
2. Assume homes constructed after 1992 installed ULFTs.
3. Net change due to rebate program is based on historical active conservation activity.
4. The initial proportions are fundamentally calculated by taking the initial proportions of homes by age (corresponding to efficiency levels) and adding the net change due to natural replacement and adding change due to rebate program minus the "free rider effect." No fixture % can exceed 90%.
- 5a. Assume a 2.5% replacement rate for older toilets to the ULFTs over the 17 years since they where required.
- 5b. Assume a future annual replacement rate of 2.0% for high efficiency fixtures, 2.0% for medium efficiency fixtures and 2.5% for low efficiency fixtures. 2.0% corresponds to a 50 year fixture life. 2.5% corresponds with a 40 year fixture life.

These initial proportions, determined in the fixture model and found in WCWCD's background water use data analysis workbook, are then entered into the DSS Model for each fixture's "Codes and Standards" worksheet. A screenshot of the single family toilet codes and standards worksheet is shown in the following figure. Most DSS Models include fixture models for SF and MF toilets, showers, clothes washers, and commercial toilets and urinals.

Figure A-5. Example Residential Toilet Fixture Screenshot from DSS Model

Single Family Toilets	
General	
Measure Category	Default Plumbing Code
Start Year	2010
Description	<p>The DSS Model is capable of modeling multiple types of fixtures, including fixtures with slightly different design standards. For example currently toilets can be purchased that can flush at 1.28 gallons per flush or 1.6 gallons per flush. The higher flush toilets (3.5gpf) still exist but no longer can be purchased in this state and cannot therefore be used for a replacement or new installation. The DSS Model utilizes a fixture replacement table to decide what type of toilet is installed when a fixture is replaced or a new fixture is installed. The replacement of the fixtures is listed as a percentage. For example, a value of 100% would represent that all the toilets sold would be of one particular flush volume. A value of 75% means that three out of every four toilets installed would be of that particular flush volume type.</p> <p>The DSS Model combines the effects of the following for the toilet fixture type:</p> <ul style="list-style-type: none"> • Federal Policy Act: Determines the "saturation" of 1.6 gpf toilets as it was in effect from 1992-2014 for toilet replacements. <p>An additional input to the DSS Model is the natural replacement rate of fixtures due to breakage, remodeling or other reason for replacement over time. To do this the DSS Model uses a percentage value for each fixture type that becomes the assumed natural replacement rate for that fixture. For example, a natural replacement rate of 2.5% is used for older toilets. This value can be modified by the user as shown on the previous worksheet. Each year the number of remaining accounts with old toilets is calculated as 0.975 times the prior year's value.</p>
Comments	<ol style="list-style-type: none"> 1. Volumes-per-use are based on average flush volumes for age of toilet. New toilets when out of adjustment flush at an average of 1.8 gpf instead of 1.6 gpf. 2. Initial proportions of fixtures installed in homes are based on the age of homes as provided in the 2010 Census. 3. Assume homes constructed after 1992 installed ULFTs. 4. Net change due to rebate program is based on historical active conservation activity. 5. The initial proportions are fundamentally calculated by taking the initial proportions of homes by age (corresponding to efficiency levels) and adding the net change due to natural replacement and adding change due to rebate program minus the "free rider effect." No fixture % can exceed 90%. 6. Assume a 2.5% replacement rate for older toilets to the ULFTs over the 17 years since they where required. 7. Assume a future annual replacement rate of 2.0% for high efficiency fixtures, 2.0% for medium efficiency fixtures and 2.5% for low efficiency fixtures. 2.0% corresponds to a 50 year fixture life. 2.5% corresponds with a 40 year fixture life.
Customer Category	Single Family
End Use	Toilets
Effected Fixtures	
1.6 gpf ULFT	<input checked="" type="checkbox"/>
High Use Toilet	<input checked="" type="checkbox"/>
1.28 gpf HET	<input checked="" type="checkbox"/>
Initial Fixture Proportions	
1.6 gpf ULFT	90.0%
High Use Toilet	10.0%
1.28 gpf HET	0.0%
Total	100.0%

Single Family Toilets

Categories

DSS Model Fixture Replacement Rates

An additional input to the DSS Model is the natural replacement rate of fixtures due to breakage, remodeling, or other reason. To do this, the DSS Model uses a percentage value for each fixture type that becomes the assumed natural replacement rate for that fixture. For example, high flush toilets have a replacement rate value of 2.5%. Each year the number of remaining accounts with old toilets is calculated as 0.975 times the prior year's value. This value can be modified by the user for any fixture as shown in Figure A-6 below.

Also included in the following figure are example fixture efficiencies, which can be adjusted to any desired level based on service area characteristics. MWM can update data on efficiency levels found in the field and the California Single Family Water Use Efficiency Study (DeOreo, 2011) or other recent information related to fixture saturation rates.

Figure A-6. Example Future Replacement Rates of Fixtures from DSS Model

		Fixtures			
Fixture Name	End Use	Average Water Use	Units	Fixture Life (yrs)	Replacement Rate
1.28 gpf HET	Toilets	1.30	gpf	50	2.0%
1.6 gpf ULFT	Toilets	1.80	gpf	50	2.0%
High Use Toilet	Toilets	3.50	gpf	40	2.5%
1 gpf Urinal	Urinals	1.00	gpf	50	2.0%
0.5 gpf Urinal	Urinals	0.50	gpf	50	2.0%
Waterless Urinal	Urinals	0.00	gpf	50	2.0%
High Use Urinals	Urinals	3.00	gpf	40	2.5%
Quart Urinals	Urinals	0.25	gpf	50	2.0%
High Efficiency 2 gpm	Showers	13.92	gal per use	25	4.0%
Low Flow 2.5 gpm	Showers	18.27	gal per use	25	4.0%
High Flow > 3 gpm	Showers	23.49	gal per use	25	4.0%
Efficient	Clothes Washers	12.00	gal per use	10	10.0%
Medium Efficiency	Clothes Washers	19.20	gal per use	10	10.0%
Top Loader	Clothes Washers	34.20	gal per use	10	10.0%

DSS Model End Uses

Indoor and outdoor residential and non-residential end use breakdowns can be found in the "End Uses" section of WCWCD's DSS Model on the "Breakdown" worksheet. A screenshot example of this worksheet is shown in Figure A-6. The sources of these values are: 1) "California Single Family Water Use Efficiency Study" (DeOreo, 2011); 2) "Residential End Uses of Water" (DeOreo, 1999, 2015 update pending); 3) "Commercial and Institutional End Uses of Water" (Dziegielewski, 2000); and 4) WCWCD supplied data on costs and savings.

Figure A-7. End Use Breakdown Example Screenshot

Breakdown							
Indoor							
End Use Name	SF	MF	COM	IND	INST	IRR	OTH
Toilets	16.0%	18.0%	16.5%	12.0%	18.0%		
Urinals			4.0%	3.0%	5.0%		
Faucets	21.0%	12.0%	13.0%	14.0%	14.0%		
Showers	24.0%	28.0%	8.0%	8.0%	8.0%		
Dishwashers	2.0%	5.0%	6.0%	6.0%	6.0%		
Clothes Washers	13.0%	16.5%	15.0%	15.0%	15.0%		
Process			23.0%	27.0%			
Kitchen Spray Rinse			5.0%	5.0%	5.0%		
Internal Leakage	7.0%	5.0%	9.5%	10.0%	10.0%		
Baths	2.5%	1.5%					
Other	14.5%	14.0%	0.0%	0.0%	19.0%		
Total	100.0%	100.0%	100.0%	100.0%	100.0%	0.0%	0.0%
Outdoor							
End Use Name	SF	MF	COM	IND	INST	IRR	OTH
Irrigation	80.0%	83.0%	95.0%	95.0%	95.0%	95.0%	
Pools	1.0%	2.0%					
Wash Down	7.0%	4.0%					
Car Washing	7.0%	4.0%					
External Leakage	5.0%	7.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Outdoor							95.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

End use breakdown values will vary between different water agencies due to differing demographics of their service area population. Residential frequency of use information for toilets, showers, and washers as well as non-residential frequency of use of toilets and urinals is included in the "Codes and Standards" green section on the "Fixtures" worksheet of WCWCD's DSS Model. It is then confirmed in each "Service Area Calibration End Use" worksheet. Calculated frequencies of use in uses/user/day for customer end uses are presented in each customer category's "Service Area Calibration End Use" worksheet and compared to an industry-accepted use range based on AWWARF's residential, commercial and institutional end use reports mentioned previously. An example of this calibration sheet is shown in the screenshot in Figure A-8 below.

Figure A-8. Single Family End Use Breakdown and Fixture Use Frequency Example Screenshot

Single Family							
End Use	Use Percentage	Uses/User/Day	Lower	Upper	State	Fixture Model	
Toilets	16.0%	4.76	4.5	5.6	Calibrated	Edit	
Faucets	21.0%						
Showers	24.0%	0.73	0.6	0.9	Calibrated	Edit	
Dishwashers	2.0%						
Clothes Washers	13.0%	0.32	0.3	0.42	Calibrated	Edit	
Internal Leakage	7.0%						
Baths	2.5%						
Other	14.5%						
Total	100.0%						

A.2 Present Value Parameters

Present value analysis using constant FY 2016 dollars and a real discount rate of 3% is used to discount costs and benefits to the base year. From this analysis, benefit-cost ratios of each measure are computed. When measures are put together in programs, the model is set up to avoid double counting savings from multiple measures that act on the same end use of water. For example, multiple measures in a program may target toilet replacements. The model includes assumptions to apportion water savings between the multiple measures.

Economic analysis can be performed from several different perspectives based on which party is affected. For planning water use efficiency programs for utilities, the perspectives most commonly used for benefit-cost analyses are the “utility” perspective and the “community” perspective. The utility benefit-cost analysis is based on the benefits and costs to the water provider. The community benefit-cost analysis includes the utility benefit and costs together with account owner/customer benefits and costs. These include customer energy and other capital or operating cost benefits plus costs of implementing the measure beyond what the utility pays.

The utility perspective offers two advantages. First, it considers only the program costs that will be directly borne by the utility. This enables the utility to fairly compare potential investments for saving versus supplying increased quantities of water. Second, revenue shifts are treated as transfer payments, which means program participants will have lower water bills and non-participants will have slightly higher water bills so that the utility’s revenue needs continue to be met. Therefore, the analysis is not complicated with uncertainties associated with long-term rate projections and retail rate design assumptions. It should be noted that there is a significant difference between the utility’s savings from the avoided cost of procurement and delivery of water and the reduction in retail revenue that results from reduced water sales due to water use efficiency. This budget impact occurs slowly and can be accounted for in water rate planning. Because it is the water provider’s role in developing a water use efficiency plan that is vital in this study, the utility perspective was primarily used to evaluate elements of this report.

The community perspective includes the utility and the customer costs and benefits. Costs incurred by customers striving to save water while participating in water use efficiency programs are considered as well as the benefits received in terms of reduced energy bills (from water heating costs) and wastewater savings, among others. Water bill savings are not a customer benefit in the aggregate for reasons described above. Other factors external to the utility, such as environmental effects, are often difficult to quantify or are not necessarily under the control of the utility. They are therefore frequently excluded from economic analyses, including this one.

The time value of money is explicitly considered. Typically the costs to save water occur early in the planning period, whereas the benefits usually extend to the end of the planning period. A long planning period of 30-40 years is typically used because costs and benefits that occur beyond 20-50 years have very little influence on the total present value of the costs and benefits. The value of all future costs and benefits is discounted to the analysis start year in the DSS Model at the real interest rate of 3.0%. The DSS Model calculates this real interest rate, adjusting the current nominal interest rate (assumed to be approximately 6.1%) by the assumed rate of inflation (3.0%). Cash flows discounted in this manner are herein referred to as Present Value (PV) sums.

A.3 Assumptions about Measure Costs

Costs were determined for each of the measures based on industry knowledge, past experience, and data provided by WCWCD. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the costs to staff the measures and to obtain and maintain equipment; and a one-time set-up cost. The set-up cost is for measure design by staff or consultants, any required pilot testing, and preparation of

materials that will be used in marketing the measure. The model was run for 45 years (each year from 2016 through 2060). Costs were spread over the time period depending on the length of the implementation period for the measure and estimated voluntary customer participation levels.

Lost revenue due to reduced water sales is not included as a cost because the water use efficiency measures evaluated herein generally take effect over a long span of time that is sufficient to enable timely rate adjustments as necessary to meet fixed cost obligations and savings on variable costs such as energy and chemicals.

A.4 Assumptions about Measure Savings

Data necessary to forecast water savings of measures include specific data on water use, demographics, market penetration, and unit water savings. Savings normally develop at a measured and predetermined pace, reaching full maturity after full market penetration is achieved. This may occur three to seven years after the start of implementation, depending upon the implementation schedule.

For every water use efficiency activity or replacement with more efficient devices, there is a useful life. The useful life is called the "Measure Life" and is defined as how long water use efficiency measures stay in place and continue to save water. It is assumed that measures implemented because of codes, standards, or ordinances (e.g., toilets) would be permanent and not revert to an old inefficient level of water use if the device needed to be replaced. However, some measures that are primarily behavioral based, such as residential surveys, are assumed to need to be repeated on an ongoing basis to retain the water savings (e.g., homeowners move away and new homeowners have less efficient water usage practices around the home). Surveys typically have a measure life on the order of five years.

ATTACHMENT B MEASURE SCREENING PROCESS AND RESULTS

The review and screening of water conservation measures is an important step in updating the water conservation program. In this case, some of the measures reviewed have already been implemented by WCWCD and some of the measures would be new programs. This task included a review of WCWCD's current water conservation measures, identification of current and new measures that may be appropriate for the local entities, and the screening of these measures to a short-list for detailed evaluation (benefit-cost analysis). To complete this process, a list of potential demand management measures for qualitative evaluation (screening) was compiled. The list includes devices or programs (e.g., new high efficiency toilets that would save water) that can be used to achieve water conservation; methods through which the device or program will be implemented; and what distribution method or mechanism can be used to activate the device or program. The list of potential measures was drawn from the general experience of MWM and WCWCD as well as review of cutting edge conservation programs currently being implemented by other water agencies. A list of all the measures considered, as well as the generic measure descriptions used to assess the measure, can be found in Table B-1 below.

WCWCD invited community members and municipal representatives to assist in evaluating the available measures. This Water Conservation Plan Update Workgroup (Workgroup) consisted of 13 individuals that met monthly throughout 2014. With a facilitator managing the discussion, the Workgroup was given a series of presentations about water resources and issues, with a primary focus on WCWCD's water conservation programs and goals. With this information and the different perspectives brought by members of the Workgroup, they assisted MWM in the screening process of conservation measures. This process was undertaken to reduce the new measures to be considered to a more manageable number and to eliminate those measures that are not as well suited to WCWCD's customer base. The result of this process was a short list of measures for further evaluation. This evaluation was specific to the water use characteristics, economies of scale, demographics, and other factors that are unique to WCWCD.

MWM selected the voting criteria and scale. Each potential measure was screened by the Workgroup based on the qualitative criteria below, scored on a scale of 1 to 5 (where 1 represented strongly disapprove of implementing measure; 5 being strongly approve implementing measure). Each screening workshop attendee from the service area was allowed one vote. The votes were then totaled with the measures with the highest scores considered most likely to succeed in the WCWCD service area. The screening was completed in a one-day web-based conferencing call in April 2014, facilitated by MWM.

The measures were screened by WCWCD and the Workgroup using the following criteria:

- Service Area Match – Is the technology appropriate for the area's climate, building stock, or lifestyle? For example, promoting Xeriscape gardens for multifamily or commercial sites may not be appropriate where little or no landscapes exist among the customer base.
- Long Term/Permanent Water Savings – What are the measure's long term or permanent water savings? For example, some measures, such as public information, only show an impact for a couple of years unless repeated indefinitely, while others show a longer term savings (e.g., high efficiency toilets save water for the life of the toilet).

- Savings Quantifiable – Are the water savings quantifiable? For example, it is difficult to determine the amount of water saved in educational programs where customer water use cannot be tracked after participation in the program versus a water efficient irrigation upgrade rebate where water savings are measured after implementation.
- Customer Acceptance/Equity – Are customers willing to implement measures? If not, the market penetration rates (and thus the water savings) might be too low to be significant. Measures should also be equitable (i.e., one category of customers should not benefit while another pays the costs without receiving benefits). Customer acceptance may be based on:
 - Convenience
 - Economics
 - Perceived fairness
 - Aesthetics

The initial list and description of the measures preliminarily considered can be found in the following Table B-1.

Table B-1 Existing and Potential Measures Assessed in the Measure Screening Process

Existing or Potential New Measures		Pass?	Comments
Specific Program	Focus of Program	Measure Description	
Existing Measures			
Financial Incentives for Irrigation Upgrades	SF, MF, COM, INST Outdoor	For existing SF, MF, and COM customers with landscape. Provide rebates towards the purchase and installation of selected types of irrigation equipment upgrade, including low-volume sprinkler heads, check valves, and rain sensors. Rebate is up to one-half of cost of equipment. Assume average rebate to be \$2,500 for non-residential customers.	YES
Smart Irrigation Controller Rebates	SF, MF, COM, INST Outdoor	Provide a 50% cost-share for the purchase of a SMART irrigation controller. Require customer to have a "Water Check" and education.	YES
Distribute Retrofit Kits	SF Indoor	Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install low-flow showerheads, faucet aerators, and toilet tank retrofit devices. Distribute at community event booths.	YES
Toilet Leak Detection	SF Indoor	Distribute leak detection tablets for homeowners to test toilets for leaks. Offer advice on toilet leak repair. Continue "Fix the Leak Week" campaign.	YES
Washer Rebates for High Efficiency Machines	SF Indoor	Homeowners would be eligible to receive a rebate on a new water efficient clothes washer. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology. Can rebate on sliding scale and vary with water efficiency of new machine. Water rebate averages \$200; total rebate higher if local Energy Company participates.	YES Measure offered previously by St. George City but not currently offered.

Existing or Potential New Measures			Pass?	Comments
Specific Program	Focus of Program	Measure Description		
High Efficiency Toilets (HET) Rebates	SF, MF, COM, INST Indoor	Provide a \$75 rebate or voucher for the installation of a high efficiency toilet (HET). HETs are defined as any toilet that flushes 20% less than an ultra-low flow toilet (ULFT) and include dual flush technology. Rebate amounts would reflect the incremental purchase cost. This program will be eliminated as 1.28 gpf toilets are mandated by state or federal law. This program must be WaterSense labeled.	YES	
Single Family Water Surveys	SF Outdoor	Continue outdoor water surveys (Water Checks) for existing single family residential customers. The participant is provided with a customized report to the homeowner regarding how to save water in their home.	YES	
Multifamily Washer Rebate (Intensive)	MF Indoor	Provide a rebate to apartment complexes (10 or more units) for efficient washing machines in buildings over a certain size that have a common laundry room. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology.	YES	
Public Information Program	SF	Public education would be used to raise awareness of other conservation measures available to customers. Programs could include school programs, poster contests, speakers to community groups, radio and television time, and printed educational material, such as bill inserts, etc. Program would continue indefinitely.	YES	
Conservation Pricing	SF	Existing single family water rates would be changed to create an added price incentive to use less water. Modifications could include adjusting the tiers or rates in the upper tiers to increase the incentives to reduce landscape watering. WWCWD would suggest and support a water rate study to develop specific pricing levels. Rates would be decided by the individual cities.	YES	
Rotating Sprinkler Nozzle Rebates	SF, MF, COM, INST Outdoor	Offer a rebate for upgrading to a rotating nozzle for single family properties. Work with irrigation supply companies to promote.	YES	

Existing or Potential New Measures		Pass?	Comments
Specific Program	Focus of Program	Measure Description	
CII Rebates to Replace Inefficient Equipment	COM, INST	Provide a rebate for a standard list of water efficient equipment. Included would be x-ray machines, icemakers, air-cooled ice machines, steamers, washers, spray valves, efficient dishwashers, replace once through cooling, add conductivity meters on cooling towers, and other equipment. Pattern after San Diego County Water Authority or Seattle Water Department programs. Best if paired with a CII Survey program. Offer to audited sites.	YES
Replace Spray Nozzles	COM, INST	Provide free installation of 1.14 gpm spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens. Program length 2-5 years.	YES
High Efficiency Urinal Rebate (<.5 gallon)	COM, INST Indoor	Provide a rebate for High Efficiency Urinals (HEUs) to existing high use CII customers (such as restaurants). Eligible replacements would include urinals flushing with no more than 0.5 gpf and best available technology (1 pint).	YES
Irrigation Water Surveys (Water Checks)	INST Outdoor	All public and private irrigators of landscapes would be eligible for free landscape water surveys upon request. Normally those with high water use would be targeted and provided a customized report. Assume 5% of large turf areas are surveyed per year. Three-year program, then repeat (3-year measure life).	YES
Xeriscape Demonstration Gardens	SF Outdoor	Create a demonstration garden displaying living examples of low-water-usage gardens and landscaping. The utility would provide signs and brochures to educate people visiting the garden. Costs to be determined. Possibly combine with Public Information Program.	YES
Train Landscape Maintenance Workers	MF, COM, INST Outdoor	WCWCD would sponsor training for managers and workers in landscape maintenance methods that will save irrigation water. Work with Dixie State and Utah State University Extension.	YES

Existing or Potential New Measures			Pass?	Comments
Specific Program	Focus of Program	Measure Description		
Real Water Loss Reduction	System	Implement an Audit and loss control on WCWCD systems. This involves auditing the system to find water loss and apply measures to find and repair leaks in the distribution system and reduce real water loss. A ten year program to reduce unaccounted for water to 10% of production or less is proposed for this measure. Program would follow AWWA established standards.	YES	
New Measures				
New Development Require New Landscape and Irrigation requirements	NEW SF, MF, COM Outdoor	Create a model ordinance that specifies that new single family and non-residential buildings be landscaped according to Xeriscape principals with appropriate plant selection and irrigation systems. Would be up to the cities to adopt and then enforce the ordinance.	NO	Most Workgroup members felt this would be hard to get through city councils and costly to enforce. Also new development is already implementing smaller yards. It was addressed that people need choices.
Turf Removal	SF, MF, COM, INST Outdoor	A \$1.50 per square foot incentive is available for removing existing turf and replacing with desert landscaping or synthetic turf. Maximum rebate of \$5,000. Average rebate of \$1,500 for SF accounts and \$2,500 for non-SF accounts. The replacement of irrigated vegetation with desert landscaping or synthetic turf may significantly reduce outdoor watering needs.	YES	Program gets proposed frequently by new residents. Workgroup felt justified to have the numbers run on this measure even though this program presents many issues, such as being very expensive, health concerns, and urban heat islands effect.

Existing or Potential New Measures			Pass?	Comments
Specific Program	Focus of Program	Measure Description		
New Development Require Multifamily Submetering on New Accounts	New MF	Require the metering of individual units in new multifamily, condos, townhouses, mobile-home parks, and business centers (less than four stories and with water heater in the units). Utility administers meter read and bill program.	NO	Most communities are already doing this. Consider if individual impact fees apply or are waived.
Efficient Outdoor Use Education and Training Programs	SF	WCWCD would offer, organize, and sponsor a series of educational workshops for homeowners in efficient landscaping and irrigation principals. Utilize guest speakers, Xeriscape demonstration gardens, and incentives, such as a nursery plant coupon.	YES	This is already being done.
CII Surveys	CII	High water use accounts would be offered a free water survey that would evaluate ways for the business to save water and money. Assume reach top 5% of high water using accounts by end of program.	YES	
School Building Retrofit	INST	Run a program patterned after Eastern Municipal Water District (EMWD) Public School Retrofit Program wherein the school receives a grant to replace fixtures and upgrade irrigation systems. A description of EMWD's program can be found after this table.	YES	Secondary water is used on most schools.
Billing Report Educational Tool	ALL	Example: Water Smart Software with online access to customer billed consumption and customized suggestions to save water.	YES	This may be done by neighborhood.
Mobile Home Park Submetering	MF Indoor	Require or provide a partial cost rebate to meter all remaining mobile home parks that are currently master metered and not separately metered. Pattern after Santa Clara Valley Water District's (California) program. A description on Santa Clara's program can be found after this table.	YES	
High Efficiency Urinal Rebates	CII Indoor	Provide a rebate or voucher for the installation of a HEU. WaterSense standard is 0.5 gpf or less, though models flushing as low as 0.125 gpf (1 pint) are available and	YES	

Existing or Potential New Measures		Pass?	Comments
Specific Program	Focus of Program	Measure Description	
		function well and so could be specified. Rebate amounts would reflect the incremental purchase cost.	
Install High Efficiency Fixtures in Government Buildings	CII Indoor	Provide rebates or grants to install high efficiency faucets, toilets, urinals, and showerheads in local and state government facilities.	YES
Install or rebate high efficiency faucets	CII Indoor	Consider direct install program, rebates, or grants for installation of high efficiency sensor faucet fixtures in all or selected high-use commercial and institutional buildings.	YES
Water Budgeting/Monitoring	Large Landscape	Website that provides feedback on irrigation water use (budget vs. actual) modeled after Municipal Water District of Orange County's Landscape Certification Program.	YES
Rebate or Free Rain Sensors	Outdoor ALL or Selected	Provide a rebate or free rain sensor shut-off device for existing irrigation controllers. These cancel scheduled sprinkling when sufficient rain has been received. This measure is most effective in areas with intermittent rain in peak watering seasons and in spring and fall when early or late rains occur.	NO Not enough rain during the months that it is needed to warrant rebate. Stay with SWAT controllers.
Require Rain Sensors	Outdoor ALL or Selected	Require installation of rain sensor shut-off devices when installing new in-ground irrigation systems.	NO Not enough rain during the months that it is needed to warrant rebate. Stay with SWAT controllers.
Gray water Retrofit SF	SF Outdoor	Provide a rebate to assist a certain percentage of single family homeowners per year to install gray water systems. Coordinate with county health department.	NO Workgroup felt there were too many issues with this. The State

Existing or Potential New Measures			Pass?	Comments
Specific Program	Focus of Program	Measure Description		
				legalized it, but gave implementation responsibility to each public health department. No programs are established yet.
Require Plumbing for Gray Water In New SF Development	SF Outdoor	Require builders of single family homes to provide plumbing for and/or install a gray water system in new homes.	NO	Workgroup felt there were too many issues with this. The State legalized it, but gave implementation responsibility to each public health department. No programs are established yet.
Low Impact New and Remodeled Development	ALL	Cities would require developers of new and remodeled sites to follow Low Impact Development concepts/standards/Best Management Practices for storm water and water conservation benefits. Encourage or require use of bio-retention facilities, rain water cisterns, use of recycled water if available, gray water plumbing, etc.	NO	Too early for this program in this area. Could consider in the future.
Require Efficient Toilets and Urinals	ALL	Require all new development to utilize HETs (1.28 gal/flush or less) and HEUs (0.5 gal/flush or less). City and County building departments to implement through normal permitting and inspection process.	YES	
Key to Categories All – All customer categories: SF, MF, and CII System – WCWCD's Distribution System				

Public School Retrofit Program, Riverside County, California Eastern Municipal Water District

According to their CALFED Water Use Efficiency Grant Program summary:

"In 2008 the Public School Retrofit Program (PSR Program) was launched to save water in public schools, through the installation of water efficient devices. The program was jointly funded by Eastern Municipal Water District (Eastern), the United State Bureau of Reclamation (USBR), the CALFED Bay Delta Program (CALFED) and the Metropolitan Water District of Southern California (Metropolitan) with a budget of \$670,000. The program had three goals; (1) save water, (2) encourage water use efficiency, and (3) remove barriers limiting school participation in conservation programs. The PSR Program provided the direct installation of water efficient devices at no cost to schools. Devices installed include: toilets, urinals, faucets, aerators, pre-rinse spray valves, irrigation controllers and sprinkler nozzles. The program enabled schools to participate in regional conservation programs by eliminating the need for up front funding and lengthy forms and applications. Eastern staff met with school district facility planners to communicate the goals and objectives of the PSR Program. With input from school districts, eleven eligible schools were targeted and eight schools chose to participate. Each school received a site evaluation, resulting in a list of devices to be installed. Selecting devices for installation was based on evaluation results, savings assumptions, lifespan of devices and average cost per acre-foot saved. Upon completion of the initial eight schools, the program was made available to all schools within Eastern's service area. Eastern's staff began education schools on the benefits of water efficient technology available to encourage participation in the program. By the end of the program 48 schools participated, receiving varying combinations of high efficiency nozzles, ET controllers, and indoor water conservation devices. This highly successful program was a visible demonstration of water use efficiency for both students and the community. Eastern's Board of Directors recognized participating schools and provided them with banners that displayed their participation in the program and identified them as Water-Wise Schools. The PSR Program intended to retrofit eleven schools with water conserving devices, and have an estimated water savings of 79.63 acre feet per year (AFY). At the conclusion of the program, 48 schools received devices installed at no cost, with water savings estimated at 206 AFY. Eastern staff dedicated more than 300 hours to implementing the program. Staff performed landscape evaluations, shared knowledge of irrigation technology, process paperwork and prepared reports for funding partners. Schools were not required to process paperwork associated with regional conservation programs. The final cost of the program amounted to \$682,000; of which USBR with CALFED contributed \$300,000 and Metropolitan rebates amounted to \$260,000."

More information can be found here: <http://www.usbr.gov/lc/socal/reports/PublicSchoolRetrofitRiversideCty.pdf>

Figure B-2 CALFED Public School Retrofit Program for Riverside County, Public Campaign



Source:

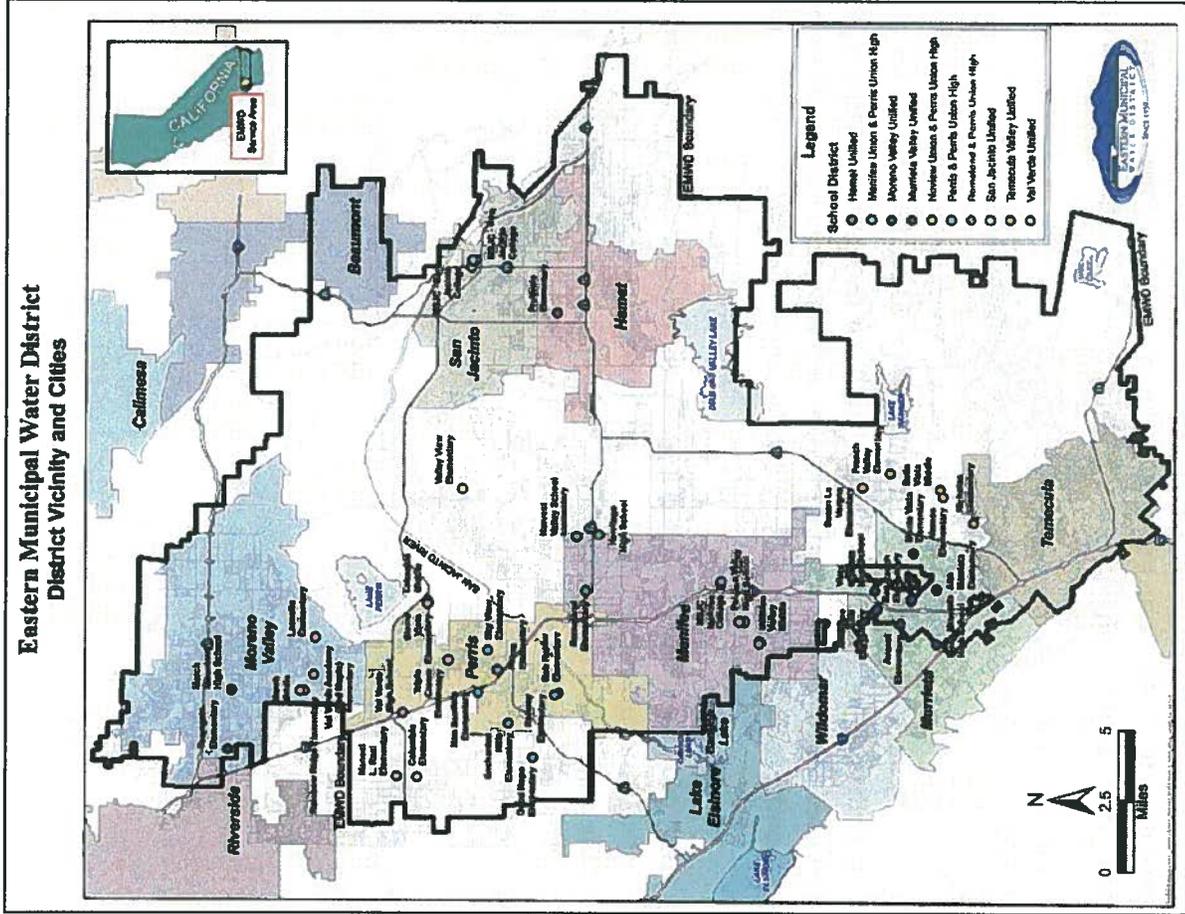
<http://www.usbr.gov/lc/social/reports/PublicSchoolRetrofitRiversideCty.pdf>

Figure B-1 CALFED Public School Retrofit Program for Riverside County, WUE Grant Program

<p>CALFED WATER USE EFFICIENCY GRANT PROGRAM</p>
<p>PUBLIC SCHOOL RETROFIT PROGRAM Riverside County, California</p>

<p>Eastern Municipal Water District 2270 Trumble Road P.O. Box 8300 Perris, California 92570-8300</p>
<p>Project Manager: Helen Stratton, Conservation Analyst</p>

Figure B-3 CALFED Public School Retrofit Program for Riverside County, EMWD District Vicinity & Cities



Source: <http://www.usbr.gov/lc/socal/reports/PublicSchoolRetrofitRiversideCty.pdf>

Water Submetering in Mobile Home Parks, Santa Clara Valley Water District, Water Use Efficiency Unit

As published in their August 13, 2007 report: “in 2000, the Santa Clara Valley Water District (District) began a pilot program to provide water submeters to mobile home parks in order to assist them in conserving water. In 2002, the District equipped four large mobile home parks with submeters, replacing one-meter systems in which residents in the same complex split water costs evenly, with submeters at each unit. A total of 754 submeters were installed through this program... The District provided the water submeters to the mobile home park management companies, who in turn agreed to install the submeters. Additionally, the District asked the mobile home parks to all receive an Irrigation Technical Assistance Program (ITAP) evaluation to help improve irrigation efficiency. The District also offered residents the opportunity to participate in the Water Wise House Call Program, a home water survey program that can help residents save water indoors and outdoors.”

More information can be found here: <http://www.valleywater.org/programs/submeterrebateprogram.aspx>

“It is estimated that tenants in submetered dwellings, with billing based upon actual use, reduce water use in the 10% to 20% range. This is partly due to changed habits caused by the pricing signal and partly due to the identification and repair of leaks. Tenants who are individually metered can benefit by being able to monitor and control their water use—with submetering, they only pay for what they use, not what others use. A study by the Seattle Public Utilities found that about 10% of the monitored tenants used 50% of the water; 80% of the tenants consumed water at a rate of \$15 or less per month; and 20% consumed water at a rate in excess of \$50 per month. Some tenants were found to be conducting water-intensive businesses in the units, such as laundries and photo labs.

The mobile home park management companies agreed to track water bills for the submetered complexes so that water savings could be determined. In August 2007, the property management company provided water use information for the aforementioned mobile home parks for the last 10 years (about two to three years before the submeters were installed and the years following installation up until 2007). The water usage data for the four mobile home parks examined shows an annual water savings of 15-30%. The data was analyzed and it was determined that the average water savings was 24.8 CCF or about 18,500 gallons per household per year. The data was normalized for weather and tenant occupancy. The submeters were installed during 2002 and so were not included in the pre- or post-installation water use average.”

More information can be found here: <http://www.allianceforwaterefficiency.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=4694>
<http://www.allianceforwaterefficiency.org/submetering.aspx>

Figure B-4 Screenshot of Santa Clara Valley Water District Submeter Rebate Program Website

Santa Clara Valley Water District

Home Services Newsroom Business Jobs About

Search GO

Font Size A A A

Programs > Water Conservation > Conservation for Business > Submeter Rebate Program

Submeter Rebate Program

PROGRAM UPDATE

Receive up to \$150 per installed submeter. The Santa Clara Valley Water District is offering a rebate (up to \$150 per installed submeter) to mobile home parks and condominium complexes for adding residential submeters.

Why install water submeters?

Just as residents are responsible for their own electric bill, water submetering:

- makes residents responsible for their own water use
- can help keep rents low because water costs are taken out
- encourages residents to fix or report leaks, helping with long-term maintenance.

How much water will my complex save?

In a pilot study, the District found that complexes reduce their water use by an average of 25 percent!

Participation is easy:

1. Applicant must contact the Santa Clara Valley Water District before the start of the project. (408) 630-2707
2. If the site has an acre or more of irrigated landscape, schedule a landscape water-use survey with the Santa Clara Valley Water District. Surveys are provided free of charge. [Click here for more information.](#)
3. Submit a completed Commercial Rebate Program Application before the submeters are installed.
4. Confirm device qualification for reimbursement.
 - Select meters that are compliant with the Uniform Plumbing Code
 - Certify the selected equipment with the Department of Weights & Measures <http://www.sccgov.org/sites/weights/Pages/Weights-and-Measures.aspx>
 - Mobile Homes: Apply for permits with the California Department of Housing & Community Development <http://www.hcd.ca.gov/>

SAFE, CLEAN WATER PROGRAM

CLEAN SAFE CREEKS PLAN

WATER CONSERVATION

- Rebates
- Homes
- Businesses
- Commercial Washer Rebate Program
- Commercial Rebate Program
- Submeter Rebate Program
- Commercial And Apartment High-Efficiency Toilet Program
- Landscaping
- Agriculture
- Free Conservation Items
- Events And Workshops
- Conservation Program Reports & Studies

GRANTS AND PARTNERSHIPS

TEACHERS & STUDENTS

ADOPT A CREEK

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM (CIP)

CREEKSIDE PROPERTY PROGRAM

DAM SAFETY PROGRAM

ATTACHMENT C CONSERVATION MEASURE INPUTS

DSS Model presents results through 2060; representative costs, targets, and savings below are shown to the year 2030.

Overview				Customer Classes					Results	
Name	Financial Incentives for Irrigation Upgra			SF	MF	COM	INST	2ndUs	Average Water Savings (mgd)	0.389304
Abbr	1			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lifetime Savings - Present Value (\$)	
Category									Utility	\$9,460,106
Measure Type	Standard Measure								Community	\$9,460,106
Time Period				End Uses					Lifetime Costs - Present Value (\$)	
First Year	2016			Toilets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Utility	\$4,623,072
Last Year	2030			Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community	\$7,424,308
Measure Length	15			Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Benefit to Cost Ratio	
Measure Life				Showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Utility	2.05
Permanent <input checked="" type="checkbox"/>				Dishwashers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Community	1.27
Fixture Costs				Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cost of Savings per Unit Volume (\$/mg)	
	Utility	Customer	Fix/Acct	Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Utility	\$723
SF	\$350.00	\$200.00	1	Kitchen Spray Rinse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	End Use Savings Per Replacement	
MF	\$2,500.00	\$2,500.00	1	Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	% Savings per Account	
COM	\$2,500.00	\$2,500.00	1	Baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SF Irrigation	15.0%
INST	\$2,500.00	\$2,500.00	1	Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MF Irrigation	15.0%
Administration Costs				Irrigation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	COM Irrigation	15.0%
Markup Percentage				Pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	INST Irrigation	15.0%
25%				Wash Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Targets	
Description				Car Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Target Method	
For SF, MF, COM, and INST customers with landscape, provide rebates towards the purchase and installation of selected types of irrigation equipment upgrade including high efficiency sprinkler heads, pressure reducing valves, and cap off or convert valves. Rebate is up to \$500 for residential accounts and up to \$5000 for mixed use accounts and up to \$10,000 for irrigation accounts. Assume average rebate to be \$2,500 for MF and non-Residential accounts and \$350 for SF accounts. Require customer to have "Water Check" and education.				External Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Percentage	
				Outdoor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	% of Accts Targeted / yr	
				Hotel-Motel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0.750%	
				Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Only Effects New Accts <input type="checkbox"/>	
				Comments						
				Existing program.						
Costs				Targets					Water Savings (mgd)	
View Summary				View Accounts					Total Savings (mgd)	
	Utility	Customer	Total	SF	MF	COM	INST	Total	2016	0.024060
2016	\$295,139	\$178,832	\$473,971	2016	382	18	21	2	2017	0.048976
2017	\$305,635	\$185,192	\$490,827	2017	395	18	22	2	2018	0.074778
2018	\$316,505	\$191,778	\$508,283	2018	410	19	23	2	2019	0.101498
2019	\$327,761	\$198,599	\$526,360	2019	424	20	24	2	2020	0.129168
2020	\$339,418	\$205,662	\$545,080	2020	439	20	25	2	2021	0.157916
2021	\$352,648	\$213,678	\$566,326	2021	456	21	26	2	2022	0.187785
2022	\$366,393	\$222,007	\$588,400	2022	474	22	27	3	2023	0.218819
2023	\$380,675	\$230,660	\$611,335	2023	493	23	28	3	2024	0.251062
2024	\$395,513	\$239,651	\$635,164	2024	512	24	29	3	2025	0.284561
2025	\$410,929	\$248,992	\$659,921	2025	532	25	30	3	2026	0.319153
2026	\$424,328	\$257,111	\$681,440	2026	549	25	31	3	2027	0.354873
2027	\$438,165	\$265,495	\$703,660	2027	567	26	32	3	2028	0.391758
2028	\$452,452	\$274,152	\$726,605	2028	585	27	33	3	2029	0.429845
2029	\$467,206	\$283,092	\$750,298	2029	604	28	34	3	2030	0.469175
2030	\$482,441	\$292,323	\$774,763	2030	624	29	35	3		

Overview	
Name	Smart Irrigation Controller Rebates
Abbr	2
Category	
Measure Type	Standard Measure

Time Period	Measure Life
First Year	2016
Last Year	2030
Measure Length	15
	Permanent <input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$150.00	\$150.00	1
MF	\$400.00	\$400.00	2
COM	\$400.00	\$400.00	2
INST	\$400.00	\$400.00	4

Administration Costs	
Markup Percentage	30%

Description
Provide a 50% cost-share up to \$150 for SF and \$400 for MF, COM, INST for the purchase of a SMART irrigation controller. Require customer to have a "Water Check" and education.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>				

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>				
Urinals	<input checked="" type="checkbox"/>				
Faucets	<input checked="" type="checkbox"/>				
Showers	<input checked="" type="checkbox"/>				
Dishwashers	<input checked="" type="checkbox"/>				
Clothes Washers	<input checked="" type="checkbox"/>				
Process	<input checked="" type="checkbox"/>				
Kitchen Spray Rinse	<input checked="" type="checkbox"/>				
Internal Leakage	<input checked="" type="checkbox"/>				
Baths	<input checked="" type="checkbox"/>				
Other	<input checked="" type="checkbox"/>				
Irrigation	<input checked="" type="checkbox"/>				
Pools	<input checked="" type="checkbox"/>				
Wash Down	<input checked="" type="checkbox"/>				
Car Washing	<input checked="" type="checkbox"/>				
External Leakage	<input checked="" type="checkbox"/>				
Outdoor	<input checked="" type="checkbox"/>				
Hotel-Motel	<input checked="" type="checkbox"/>				
Cooling	<input checked="" type="checkbox"/>				

Results	
Average Water Savings (mgd)	0.408189
Lifetime Savings - Present Value (\$)	
Utility	\$9,919,020
Community	\$9,919,020
Lifetime Costs - Present Value (\$)	
Utility	\$1,866,884
Community	\$3,302,949
Benefit to Cost Ratio	
Utility	5.31
Community	3.00
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$278

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	15.0%
MF Irrigation	15.0%
COM Irrigation	15.0%
INST Irrigation	15.0%
SF External Leakage	10.0%
MF External Leakage	10.0%
COM External Leakage	10.0%
INST External Leakage	10.0%

Comments
Existing program. Should test program after 10 years and continue if savings and costs are effective.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.750%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View	Summary		
	Utility	Customer	Total
2016	\$119,183	\$91,679	\$210,862
2017	\$123,421	\$94,939	\$218,361
2018	\$127,811	\$98,316	\$226,127
2019	\$132,356	\$101,812	\$234,169
2020	\$137,063	\$105,433	\$242,497
2021	\$142,406	\$109,543	\$251,949
2022	\$147,957	\$113,813	\$261,769
2023	\$153,724	\$118,249	\$271,973
2024	\$159,715	\$122,858	\$282,574
2025	\$165,941	\$127,647	\$293,588
2026	\$171,352	\$131,809	\$303,161
2027	\$176,939	\$136,107	\$313,046
2028	\$182,709	\$140,545	\$323,254
2029	\$188,667	\$145,128	\$333,795
2030	\$194,819	\$149,861	\$344,679

Targets					
View	Accounts				
	SF	MF	COM	INST	Total
2016	382	18	21	2	423
2017	395	18	22	2	438
2018	410	19	23	2	453
2019	424	20	24	2	470
2020	439	20	25	2	486
2021	456	21	26	2	505
2022	474	22	27	3	525
2023	493	23	28	3	545
2024	512	24	29	3	567
2025	532	25	30	3	589
2026	549	25	31	3	608
2027	567	26	32	3	628
2028	585	27	33	3	648
2029	604	28	34	3	669
2030	624	29	35	3	691

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.025227
2017	0.051352
2018	0.078406
2019	0.106422
2020	0.135434
2021	0.165577
2022	0.196895
2023	0.229434
2024	0.263241
2025	0.298365
2026	0.334635
2027	0.372088
2028	0.410762
2029	0.450697
2030	0.491935

Overview	
Name	Distribute Retrofit Kits
Abbr	3
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2025	Years	5
Measure Length	10	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$25.00	\$25.00	1

Administration Costs	
Markup Percentage	25%

Description
Provide owners of pre-1992 homes with retrofit kits that contain easy-to-install high efficiency showerheads, faucet aerators, hose shut off nozzles, timers, and toilet tank retrofit devices.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>				
Urinals					
Faucets	<input checked="" type="checkbox"/>				
Showers	<input checked="" type="checkbox"/>				
Dishwashers	<input type="checkbox"/>				
Clothes Washers	<input type="checkbox"/>				
Process					
Kitchen Spray Rinse					
Internal Leakage	<input checked="" type="checkbox"/>				
Baths	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Irrigation	<input type="checkbox"/>				
Pools	<input type="checkbox"/>				
Wash Down	<input type="checkbox"/>				
Car Washing	<input type="checkbox"/>				
External Leakage	<input type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	0.004377
Lifetime Savings - Present Value (\$)	
Utility	\$176,546
Community	\$499,116
Lifetime Costs - Present Value (\$)	
Utility	\$81,893
Community	\$147,407
Benefit to Cost Ratio	
Utility	2.16
Community	3.39
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$1,138

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	10.0%
SF Faucets	10.0%
SF Showers	10.0%
SF Internal Leakage	5.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
Existing program. When distributing kits assume some people will find and fix leaks when adding retrofit kits.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$7,955	\$6,364	\$14,320
2017	\$8,238	\$6,591	\$14,829
2018	\$8,531	\$6,825	\$15,356
2019	\$8,835	\$7,068	\$15,903
2020	\$9,149	\$7,319	\$16,468
2021	\$9,506	\$7,604	\$17,110
2022	\$9,876	\$7,901	\$17,777
2023	\$10,261	\$8,209	\$18,470
2024	\$10,661	\$8,529	\$19,190
2025	\$11,077	\$8,861	\$19,938
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View:	Accounts	
	SF	Total
2016	255	255
2017	264	264
2018	273	273
2019	283	283
2020	293	293
2021	304	304
2022	316	316
2023	328	328
2024	341	341
2025	354	354
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.003377
2017	0.006862
2018	0.010458
2019	0.014168
2020	0.017996
2021	0.018609
2022	0.019256
2023	0.019936
2024	0.020652
2025	0.021406
2026	0.017407
2027	0.013272
2028	0.008995
2029	0.004573
2030	0.000000

Overview	
Name	Toilet Leak Detection
Abbr	4
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2025	Years	5
Measure Length	10	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$5.00	\$25.00	1

Administration Costs	
Markup Percentage	15%

Description
Distribute leak detection tablets for homeowners to test toilets for leaks; offer advice on toilet leak repair.

Customer Classes					
	SF	MF	COM	INST	2ndUse
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUse
Toilets	<input checked="" type="checkbox"/>				
Urinals					
Faucets	<input type="checkbox"/>				
Showers	<input type="checkbox"/>				
Dishwashers	<input type="checkbox"/>				
Clothes Washers	<input type="checkbox"/>				
Process					
Kitchen Spray Rinse					
Internal Leakage	<input type="checkbox"/>				
Baths	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Irrigation	<input type="checkbox"/>				
Pools	<input type="checkbox"/>				
Wash Down	<input type="checkbox"/>				
Car Washing	<input type="checkbox"/>				
External Leakage	<input type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	
0.002245	
Lifetime Savings - Present Value (\$)	
Utility	\$90,723
Community	\$90,723
Lifetime Costs - Present Value (\$)	
Utility	\$30,137
Community	\$161,165
Benefit to Cost Ratio	
Utility	3.01
Community	0.56
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$817

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	10.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	1.000%
Only Effects New Accts	<input type="checkbox"/>

Comments
Existing program.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$2,928	\$12,729	\$15,656
2017	\$3,032	\$13,181	\$16,213
2018	\$3,140	\$13,650	\$16,790
2019	\$3,251	\$14,136	\$17,387
2020	\$3,367	\$14,638	\$18,005
2021	\$3,498	\$15,209	\$18,707
2022	\$3,634	\$15,802	\$19,436
2023	\$3,776	\$16,418	\$20,194
2024	\$3,923	\$17,058	\$20,981
2025	\$4,076	\$17,722	\$21,799
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View:	Accounts	
	SF	Total
2016	509	509
2017	527	527
2018	546	546
2019	565	565
2020	586	586
2021	608	608
2022	632	632
2023	657	657
2024	682	682
2025	709	709
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.001790
2017	0.003624
2018	0.005502
2019	0.007422
2020	0.009383
2021	0.009653
2022	0.009933
2023	0.010224
2024	0.010527
2025	0.010841
2026	0.008763
2027	0.006643
2028	0.004478
2029	0.002265
2030	0.000000

Overview	
Name	High Efficiency Toilets (HET) Rebates
Abbr	5
Category	
Measure Type	Standard Measure

Time Period	Measure Life
First Year	2016
Last Year	2025
Measure Length	10
	Permanent <input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$75.00	\$50.00	2
MF	\$75.00	\$50.00	5
COM	\$75.00	\$50.00	4
INST	\$75.00	\$50.00	10

Administration Costs	
Markup Percentage	25%

Description
 Provide a \$75 rebate or voucher for the installation of a high efficiency toilet (HET) to replace year 2000 and older toilet models. HETs are defined as any toilet to flush 20% less than an ULFT and include dual flush technology. Rebate amounts would reflect the incremental purchase cost. Program will be shorter lived as it is intended to be a market transformation measure and eventually would be stopped as 1.28 gpf units reach saturation.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dishwashers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen Spray Rinse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wash Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel-Motel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments
 Existing measure. Should test program after 10 years and continue if savings and costs are effective.

Results	
Average Water Savings (mgd)	0.120846
Lifetime Savings - Present Value (\$)	
Utility	\$3,142,175
Community	\$3,142,175
Lifetime Costs - Present Value (\$)	
Utility	\$997,612
Community	\$1,529,671
Benefit to Cost Ratio	
Utility	3.15
Community	2.05
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$502

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	62.8%
MF Toilets	62.8%
COM Toilets	62.8%
INST Toilets	62.8%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.750%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View	Utility	Customer	Total
Summary			
2016	\$96,912	\$51,687	\$148,599
2017	\$100,359	\$53,525	\$153,884
2018	\$103,928	\$55,428	\$159,356
2019	\$107,624	\$57,400	\$165,024
2020	\$111,452	\$59,441	\$170,893
2021	\$115,796	\$61,758	\$177,554
2022	\$120,309	\$64,165	\$184,474
2023	\$124,999	\$66,666	\$191,665
2024	\$129,871	\$69,265	\$199,136
2025	\$134,933	\$71,964	\$206,898
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets					
View	SF	MF	COM	INST	Total
Accounts					
2016	382	18	21	2	423
2017	395	18	22	2	438
2018	410	19	23	2	453
2019	424	20	24	2	470
2020	439	20	25	2	486
2021	456	21	26	2	505
2022	474	22	27	3	525
2023	493	23	28	3	545
2024	512	24	29	3	567
2025	532	25	30	3	589
2026	0	0	0	0	0
2027	0	0	0	0	0
2028	0	0	0	0	0
2029	0	0	0	0	0
2030	0	0	0	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.013317
2017	0.027004
2018	0.041046
2019	0.055427
2020	0.070133
2021	0.085132
2022	0.100458
2023	0.116100
2024	0.132047
2025	0.148291
2026	0.147146
2027	0.146016
2028	0.144901
2029	0.143801
2030	0.142716

Overview	
Name	Single Family Water Surveys
Abbr	6
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	7
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$75.00	\$10.00	1
MF	\$0.00	\$0.00	0

Administration Costs	
Markup Percentage	25%

Description
Outdoor water surveys for existing single family residential customers. Normally those with high water use are targeted and provided a customized report to the homeowner on how to save water in their home.

Customer Classes					
	SF	MF	COM	INST	2ndUse
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUse
Toilets	<input type="checkbox"/>	<input type="checkbox"/>			
Urinals					
Faucets	<input type="checkbox"/>	<input type="checkbox"/>			
Showers	<input type="checkbox"/>	<input type="checkbox"/>			
Dishwashers	<input type="checkbox"/>	<input type="checkbox"/>			
Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>			
Process					
Kitchen Spray Rinse					
Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>			
Baths	<input type="checkbox"/>	<input type="checkbox"/>			
Other	<input type="checkbox"/>	<input type="checkbox"/>			
Irrigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Pools	<input type="checkbox"/>	<input type="checkbox"/>			
Wash Down	<input type="checkbox"/>	<input type="checkbox"/>			
Car Washing	<input type="checkbox"/>	<input type="checkbox"/>			
External Leakage	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	
0.174135	
Lifetime Savings - Present Value (\$)	
Utility	\$4,040,063
Community	\$4,040,063
Lifetime Costs - Present Value (\$)	
Utility	\$2,204,091
Community	\$2,439,194
Benefit to Cost Ratio	
Utility	1.83
Community	1.66
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$770

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	10.0%
SF External Leakage	10.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	1.000%
Only Effects New Accts	<input type="checkbox"/>

Comments
Existing measure. Should test program after 10 years and continue if savings and costs are effective.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$47,733	\$5,091	\$52,824
2017	\$49,430	\$5,273	\$54,703
2018	\$51,188	\$5,460	\$56,648
2019	\$53,009	\$5,654	\$58,663
2020	\$54,894	\$5,855	\$60,749
2021	\$57,033	\$6,084	\$63,117
2022	\$59,256	\$6,321	\$65,577
2023	\$61,566	\$6,567	\$68,133
2024	\$63,966	\$6,823	\$70,789
2025	\$66,459	\$7,089	\$73,548
2026	\$68,626	\$7,320	\$75,946
2027	\$70,864	\$7,559	\$78,423
2028	\$73,175	\$7,805	\$80,980
2029	\$75,561	\$8,060	\$83,621
2030	\$78,025	\$8,323	\$86,347

Targets			
View:	Accounts		
	SF	MF	Total
2016	509	23	533
2017	527	24	552
2018	546	25	571
2019	565	26	591
2020	586	27	613
2021	608	28	636
2022	632	29	661
2023	657	30	687
2024	682	31	714
2025	709	33	742
2026	732	34	766
2027	756	35	791
2028	781	36	817
2029	806	37	843
2030	832	38	871

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.013269
2017	0.027011
2018	0.041241
2019	0.055977
2020	0.071237
2021	0.087092
2022	0.103565
2023	0.107411
2024	0.111452
2025	0.115697
2026	0.120039
2027	0.124478
2028	0.128966
2029	0.133498
2030	0.138074

Overview	
Name	Multifamily Washer Rebate
Abbr	7
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2027		
Measure Length	12		

Fixture Costs			
	Utility	Customer	Fix/Acct
MF	\$300.00	\$450.00	2

Administration Costs	
Markup Percentage	30%

Description
Provide a \$300 rebate to apartment complexes (5 or more units) for efficient washing machines in buildings over a certain size that has a common laundry room. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets		<input type="checkbox"/>			
Urinals					
Faucets		<input type="checkbox"/>			
Show ers		<input type="checkbox"/>			
Dish washers		<input type="checkbox"/>			
Clothes Washers		<input checked="" type="checkbox"/>			
Process					
Kitchen Spray Rinse					
Internal Leakage		<input type="checkbox"/>			
Baths		<input type="checkbox"/>			
Other		<input type="checkbox"/>			
Irrigation		<input type="checkbox"/>			
Pools		<input type="checkbox"/>			
Wash Down		<input type="checkbox"/>			
Car Washing		<input type="checkbox"/>			
External Leakage		<input type="checkbox"/>			
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	0.005417
Lifetime Savings - Present Value (\$)	
Utility	\$141,047
Community	\$515,014
Lifetime Costs - Present Value (\$)	
Utility	\$113,838
Community	\$245,189
Benefit to Cost Ratio	
Utility	1.24
Community	2.10
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$1,279

End Use Savings Per Replacement	
	% Savings per Account
MF Clothes Washers	62.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
Not an existing measure. Utility cost includes inspection costs. This measure used to be offered by St. George City but is no longer being offered. Should test program after 10 years and continue if savings and costs are effective. Assume change from a 34 gallons per load machine to a 13 gallons per load.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$9,155	\$10,564	\$19,719
2017	\$9,481	\$10,939	\$20,420
2018	\$9,818	\$11,328	\$21,146
2019	\$10,167	\$11,731	\$21,899
2020	\$10,529	\$12,149	\$22,677
2021	\$10,939	\$12,622	\$23,561
2022	\$11,366	\$13,114	\$24,480
2023	\$11,809	\$13,625	\$25,434
2024	\$12,269	\$14,156	\$26,425
2025	\$12,747	\$14,708	\$27,455
2026	\$13,163	\$15,188	\$28,350
2027	\$13,592	\$15,683	\$29,275
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View:	Accounts	
	MF	Total
2016	12	12
2017	12	12
2018	13	13
2019	13	13
2020	13	13
2021	14	14
2022	15	15
2023	15	15
2024	16	16
2025	16	16
2026	17	17
2027	17	17
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.000599
2017	0.001209
2018	0.001831
2019	0.002462
2020	0.003094
2021	0.003723
2022	0.004346
2023	0.004957
2024	0.005554
2025	0.006133
2026	0.006694
2027	0.007257
2028	0.007089
2029	0.006934
2030	0.006793

Overview	
Name	Public Information Program
Abbr	8
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	2
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$2.50	\$0.00	1

Administration Costs	
Markup Percentage	10%

Description
 Public education would be used to raise awareness of other conservation measures available to customers. Programs could include school programs, poster contests, speakers to community groups, radio and television time, and printed educational material such as bill inserts, etc. Program would continue indefinitely. Combine with Xeriscape Demonstration Gardens measure: Donate or acquire a portion of public or private land to create a demonstration garden displaying living examples of low water-using gardens and landscaping. The Utility would provide signs and brochures to educate those people visiting the garden.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>				
Urinals					
Faucets	<input checked="" type="checkbox"/>				
Showers	<input checked="" type="checkbox"/>				
Dishwashers	<input checked="" type="checkbox"/>				
Clothes Washers	<input checked="" type="checkbox"/>				
Process					
Kitchen Spray Rinse					
Internal Leakage	<input checked="" type="checkbox"/>				
Baths	<input checked="" type="checkbox"/>				
Other	<input checked="" type="checkbox"/>				
Irrigation	<input checked="" type="checkbox"/>				
Pools	<input checked="" type="checkbox"/>				
Wash Down	<input checked="" type="checkbox"/>				
Car Washing	<input checked="" type="checkbox"/>				
External Leakage	<input checked="" type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Comments
 Existing measure.

Results	
Average Water Savings (mgd)	
0.263688	
Lifetime Savings - Present Value (\$)	
Utility	\$6,339,244
Community	\$11,280,182
Lifetime Costs - Present Value (\$)	
Utility	\$3,232,667
Community	\$3,232,667
Benefit to Cost Ratio	
Utility	1.96
Community	3.49
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$746

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	0.5%
SF Faucets	0.5%
SF Showers	0.5%
SF Dishwashers	0.5%
SF Clothes Washers	0.5%
SF Baths	0.5%
SF Internal Leakage	0.5%
SF Other	0.5%
SF Irrigation	0.5%
SF Pools	0.5%
SF Wash Down	0.5%
SF Car Washing	0.5%
SF External Leakage	0.5%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	50.000%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View	Summary		
	Utility	Customer	Total
2016	\$70,008	\$0	\$70,008
2017	\$72,497	\$0	\$72,497
2018	\$75,076	\$0	\$75,076
2019	\$77,746	\$0	\$77,746
2020	\$80,511	\$0	\$80,511
2021	\$83,649	\$0	\$83,649
2022	\$86,909	\$0	\$86,909
2023	\$90,297	\$0	\$90,297
2024	\$93,817	\$0	\$93,817
2025	\$97,473	\$0	\$97,473
2026	\$100,652	\$0	\$100,652
2027	\$103,934	\$0	\$103,934
2028	\$107,323	\$0	\$107,323
2029	\$110,822	\$0	\$110,822
2030	\$114,436	\$0	\$114,436

Targets		
View	Accounts	
	SF	Total
2016	25,457	25,457
2017	26,363	26,363
2018	27,300	27,300
2019	28,271	28,271
2020	29,277	29,277
2021	30,418	30,418
2022	31,603	31,603
2023	32,835	32,835
2024	34,115	34,115
2025	35,445	35,445
2026	36,601	36,601
2027	37,794	37,794
2028	39,027	39,027
2029	40,299	40,299
2030	41,613	41,613

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.066149
2017	0.134542
2018	0.139207
2019	0.144025
2020	0.148984
2021	0.154342
2022	0.160130
2023	0.166114
2024	0.172304
2025	0.178708
2026	0.184776
2027	0.190493
2028	0.196402
2029	0.202510
2030	0.208821

Overview	
Name	Conservation Pricing
Abbr	9
Category	
Measure Type	Pricing Measure

Customer Class	
Customer Class	Single Family

Time Period	
First Year	2016

Description
Existing single family water rates would be changed to create an added price incentive to use less water. Modifications could include adjusting the tiers or rates in the upper tiers to increase the incentives to reduce landscape watering. County would suggest and support a water rate study to develop specific pricing levels. Rates would be left to be decided by the individual cities.

Comments
Existing measure. Elasticity: -0.05 indoor; -0.2 outdoor. 100% market penetration by end of program.

Costs			
	Utility	Customer	Total (Community)
2016	\$10,000	\$0	\$10,000
2017	\$10,000	\$0	\$10,000
2018	\$10,000	\$0	\$10,000
2019	\$10,000	\$0	\$10,000
2020	\$10,000	\$0	\$10,000
2021	\$60,000	\$0	\$60,000
2022	\$10,000	\$0	\$10,000
2023	\$10,000	\$0	\$10,000
2024	\$10,000	\$0	\$10,000
2025	\$10,000	\$0	\$10,000
2026	\$60,000	\$0	\$60,000
2027	\$10,000	\$0	\$10,000
2028	\$10,000	\$0	\$10,000
2029	\$10,000	\$0	\$10,000
2030	\$10,000	\$0	\$10,000

Planned Rate Increases			
Add Rate Increase			
Change Year	Price Incr (%)	Price Incr Adjusting for Inflation	
2016	3.5%	1.5%	Delete
2017	3.5%	1.5%	Delete
2018	3.5%	1.5%	Delete
2019	3.5%	1.5%	Delete
2020	3.5%	1.5%	Delete
2021	3.5%	1.5%	Delete
2022	3.5%	1.5%	Delete
2023	3.5%	1.5%	Delete
2024	3.5%	1.5%	Delete
2025	3.5%	1.5%	Delete
2026	3.5%	1.5%	Delete
2027	3.5%	1.5%	Delete
2028	3.5%	1.5%	Delete
2029	3.5%	1.5%	Delete
2030	3.5%	1.5%	Delete
2031	3.5%	1.5%	Delete
2032	3.5%	1.5%	Delete
2033	3.5%	1.5%	Delete
2034	3.5%	1.5%	Delete
2035	3.5%	1.5%	Delete
2036	3.5%	1.5%	Delete
2037	3.5%	1.5%	Delete
2038	3.5%	1.5%	Delete
2039	3.5%	1.5%	Delete
2040	3.5%	1.5%	Delete

Projected Price Index		
	Price Index	Cummulative Index Increase
2016	1.0	0%
2017	1.0	2%
2018	1.0	4%
2019	1.1	6%
2020	1.1	8%
2021	1.1	10%
2022	1.1	13%
2023	1.1	15%
2024	1.2	17%
2025	1.2	20%
2026	1.2	22%
2027	1.2	24%
2028	1.3	27%
2029	1.3	29%
2030	1.3	32%

Results	
Average Water Savings (mgd)	
2.132162	
Lifetime Savings - Present Value (\$)	
Utility	\$3,152,072
Community	\$3,152,073
Lifetime Costs - Present Value (\$)	
Utility	\$469,440
Community	\$469,440
Benefit to Cost Ratio	
Utility	6.71
Community	6.71
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$13

Price Elasticity		
Overall	Indoor	Outdoor
-0.14	-0.05	-0.20

Utility Costs	
Rate Study Cost	\$50,000
Rate Study Frequency (every # yrs)	5
First Year of Rate Study	2021
Annual Maintenance Cost	\$10,000

Consumer Price Index	
First Year Index	1.0
Annual Increase	2%

Water Savings	
	Total Savings (mgd)
2016	0.055565
2017	0.113080
2018	0.172607
2019	0.234213
2020	0.297963
2021	0.364137
2022	0.432819
2023	0.504098
2024	0.578067
2025	0.654820
2026	0.733980
2027	0.815628
2028	0.899845
2029	0.986717
2030	1.076329

Overview	
Name	Rotating Sprinkler Nozzle Rebates
Abbr	10
Category	
Measure Type	Standard Measure

Time Period	Measure Life
First Year	2016
Last Year	2030
Measure Length	15
	Permanent <input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$7.50	\$1.50	20
MF	\$7.50	\$1.50	30
COM	\$7.50	\$1.50	50
INST	\$7.50	\$4.50	50

Administration Costs	
Markup Percentage	10%

Description
 Offer a rebate of up to \$500 total for all irrigation incentives including rotating nozzles for SF, MF, and COM properties. 50% rebate for INST. Work with irrigation supply companies to promote.

Customer Classes				
	SF	MF	COM	INST
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dishwashers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen Spray Rinse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wash Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel-Motel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Results	
Average Water Savings (mgd)	0.259536
Lifetime Savings - Present Value (\$)	
Utility	\$6,306,738
Community	\$6,306,738
Lifetime Costs - Present Value (\$)	
Utility	\$1,206,255
Community	\$1,430,311
Benefit to Cost Ratio	
Utility	5.23
Community	4.41
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$283

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	10.0%
MF Irrigation	10.0%
COM Irrigation	10.0%
INST Irrigation	10.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.750%
Only Effects New Accts	<input type="checkbox"/>

Comments
 Existing measure. Should test program after 10 years and continue if savings and costs are effective.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$77,008	\$14,304	\$91,312
2017	\$79,747	\$14,813	\$94,559
2018	\$82,583	\$15,339	\$97,922
2019	\$85,520	\$15,885	\$101,405
2020	\$88,561	\$16,450	\$105,011
2021	\$92,013	\$17,091	\$109,104
2022	\$95,600	\$17,757	\$113,357
2023	\$99,326	\$18,449	\$117,775
2024	\$103,197	\$19,168	\$122,366
2025	\$107,220	\$19,916	\$127,135
2026	\$110,716	\$20,565	\$131,281
2027	\$114,326	\$21,236	\$135,562
2028	\$118,054	\$21,928	\$139,982
2029	\$121,904	\$22,643	\$144,547
2030	\$125,879	\$23,381	\$149,260

Targets					
View:	Accounts				
	SF	MF	COM	INST	Total
2016	382	18	21	2	423
2017	395	18	22	2	438
2018	410	19	23	2	453
2019	424	20	24	2	470
2020	439	20	25	2	486
2021	456	21	26	2	505
2022	474	22	27	3	525
2023	493	23	28	3	545
2024	512	24	29	3	567
2025	532	25	30	3	589
2026	549	25	31	3	608
2027	567	26	32	3	628
2028	585	27	33	3	648
2029	604	28	34	3	669
2030	624	29	35	3	691

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.016040
2017	0.032651
2018	0.049852
2019	0.067665
2020	0.086112
2021	0.105278
2022	0.125190
2023	0.145879
2024	0.167374
2025	0.189707
2026	0.212769
2027	0.236582
2028	0.261172
2029	0.286564
2030	0.312783

Overview	
Name	CII Rebates to Replace Ineffici
Abbr	11
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2030		
Measure Length	15		

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$5,000.00	\$2,500.00	1
INST	\$5,000.00	\$2,500.00	1

Administration Costs	
Markup Percentage	30%

Description
Provide 50% cost share for a standard list of water efficient equipment. Included would be x-ray machines, icemakers, air-cooled ice machines, steamers, washers, spray valves, efficient dishwashers, replace once through cooling, and add conductivity meters on cooling towers.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.250%
Only Effects New Accts	<input type="checkbox"/>

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Urinals			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Faucets			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Show ers			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Dishw ashers			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Clothes Washers			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Process			<input checked="" type="checkbox"/>		
itchen Spray Rinse			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Internal Leakage			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Baths					
Other				<input checked="" type="checkbox"/>	
Irrigation			<input type="checkbox"/>	<input type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Dow n					
Car Washing					
External Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Outdoor					
Hotel-Motel			<input checked="" type="checkbox"/>		
Cooling			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Comments
Existing measure. Should test program after 10 years and continue if savings and costs are effective. Patterned after San Diego County Water Authority or Seattle Water Department programs. Assume 15% market saturation. Assume average rebate of \$5,000.

Results	
Average Water Savings (mgd)	0.043361
Lifetime Savings - Present Value (\$)	
Utility	\$1,056,436
Community	\$2,829,675
Lifetime Costs - Present Value (\$)	
Utility	\$793,414
Community	\$1,098,573
Benefit to Cost Ratio	
Utility	1.33
Community	2.58
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$1,113

End Use Savings Per Replacement	
	% Savings per Account
COM Toilets	15.0%
COM Urinals	15.0%
COM Faucets	15.0%
COM Showers	15.0%
COM Dishwashers	15.0%
COM Process	15.0%
COM Kitchen Spray Rinse	15.0%
COM Internal Leakage	15.0%
INST Toilets	15.0%
INST Urinals	15.0%
INST Faucets	15.0%
INST Showers	15.0%
INST Dishwashers	15.0%
INST Internal Leakage	15.0%
INST Other	15.0%
COM Hotel-Motel	15.0%
COM Clothes Washers	15.0%
INST Clothes Washers	15.0%
INST Kitchen Spray Rinse	15.0%
COM Cooling	15.0%
INST Cooling	15.0%

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$50,652	\$19,481	\$70,133
2017	\$52,453	\$20,174	\$72,628
2018	\$54,319	\$20,892	\$75,211
2019	\$56,251	\$21,635	\$77,885
2020	\$58,251	\$22,404	\$80,655
2021	\$60,522	\$23,278	\$83,799
2022	\$62,881	\$24,185	\$87,065
2023	\$65,332	\$25,128	\$90,459
2024	\$67,878	\$26,107	\$93,985
2025	\$70,524	\$27,125	\$97,648
2026	\$72,823	\$28,009	\$100,832
2027	\$75,198	\$28,922	\$104,120
2028	\$77,650	\$29,865	\$107,516
2029	\$80,182	\$30,839	\$111,021
2030	\$82,797	\$31,845	\$114,642

Targets			
View:	Accounts		
	COM	INST	Total
2016	7	1	8
2017	7	1	8
2018	8	1	8
2019	8	1	9
2020	8	1	9
2021	9	1	9
2022	9	1	10
2023	9	1	10
2024	10	1	10
2025	10	1	11
2026	10	1	11
2027	11	1	12
2028	11	1	12
2029	11	1	12
2030	12	1	13

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.002732
2017	0.005560
2018	0.008488
2019	0.011516
2020	0.014648
2021	0.017892
2022	0.021254
2023	0.024737
2024	0.028346
2025	0.032084
2026	0.035952
2027	0.039938
2028	0.044046
2029	0.048280
2030	0.052643

Overview	
Name	Replace Spray Nozzles
Abbr	12
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2020		
Measure Length	5		

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$150.00	\$0.00	1

Administration Costs	
Markup Percentage	25%

Description
Provide free installation of 1.15 gpm spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens. Current federal standard is a 1.6 gpm valve.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$2,670	\$0	\$2,670
2017	\$2,765	\$0	\$2,765
2018	\$2,864	\$0	\$2,864
2019	\$2,965	\$0	\$2,965
2020	\$3,071	\$0	\$3,071
2021	\$0	\$0	\$0
2022	\$0	\$0	\$0
2023	\$0	\$0	\$0
2024	\$0	\$0	\$0
2025	\$0	\$0	\$0
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Customer Classes					
	\$F	MF	COM	INST	2ndUse
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	\$F	MF	COM	INST	2ndUse
Toilets			<input type="checkbox"/>		
Urinals			<input type="checkbox"/>		
Faucets			<input type="checkbox"/>		
Show ers			<input type="checkbox"/>		
Dishw ashers			<input type="checkbox"/>		
Clothes Washers			<input type="checkbox"/>		
Process			<input type="checkbox"/>		
itchen Spray Rinse			<input checked="" type="checkbox"/>		
Internal Leakage			<input type="checkbox"/>		
Baths					
Other					
Irrigation			<input type="checkbox"/>		
Pools					
Wash Down					
Car Washing					
External Leakage			<input type="checkbox"/>		
Outdoor					
Hotel-Motel			<input type="checkbox"/>		
Cooling			<input type="checkbox"/>		

Results	
Average Water Savings (mgd)	
0.003209	
Lifetime Savings - Present Value (\$)	
Utility	\$85,151
Community	\$548,565
Lifetime Costs - Present Value (\$)	
Utility	\$13,494
Community	\$13,494
Benefit to Cost Ratio	
Utility	6.31
Community	40.65
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$256

End Use Savings Per Replacement	
	% Savings per Account
COM Kitchen Spray Rinse	54.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
Existing measure. Should test program after 10 years and continue if savings and costs are effective. Assume 54% water savings based on replacing a 2.5 gpm valve with a 1.15 gpm valve.

Targets		
View:	Accounts	
	COM	Total
2016	14	14
2017	15	15
2018	15	15
2019	16	16
2020	16	16
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.000627
2017	0.001275
2018	0.001947
2019	0.002643
2020	0.003363
2021	0.003363
2022	0.003363
2023	0.003363
2024	0.003363
2025	0.003363
2026	0.003363
2027	0.003363
2028	0.003363
2029	0.003363
2030	0.003363

Overview	
Name	High Efficiency Urinal Rebate (
Abbr	13
Category	
Measure Type	Standard Measure

Time Period	Measure Life
First Year	2016
Last Year	2025
Measure Length	10
	Permanent <input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$200.00	\$200.00	10
INST	\$200.00	\$200.00	10

Administration Costs	
Markup Percentage	25%

Description
Provide a rebate of \$200 for high efficiency urinals to High Efficiency existing high use CII customers (such as restaurants). Eligible replacements would include urinals flushing with no more than 0.5 gpf and best available technology.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets			<input type="checkbox"/>	<input type="checkbox"/>	
Urinals			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Faucets			<input type="checkbox"/>	<input type="checkbox"/>	
Showers			<input type="checkbox"/>	<input type="checkbox"/>	
Dishwashers			<input type="checkbox"/>	<input type="checkbox"/>	
Clothes Washers			<input type="checkbox"/>	<input type="checkbox"/>	
Process			<input type="checkbox"/>		
Kitchen Spray Rinse			<input type="checkbox"/>	<input type="checkbox"/>	
Internal Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Baths					
Other				<input type="checkbox"/>	
Irrigation			<input type="checkbox"/>	<input type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Down					
Car Washing					
External Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Outdoor					
Hotel-Motel			<input type="checkbox"/>		
Cooling			<input type="checkbox"/>	<input type="checkbox"/>	

Results	
Average Water Savings (mgd)	
0.004056	
Lifetime Savings - Present Value (\$)	
Utility	\$106,156
Community	\$106,156
Lifetime Costs - Present Value (\$)	
Utility	\$401,084
Community	\$721,951
Benefit to Cost Ratio	
Utility	0.26
Community	0.15
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$6,016

End Use Savings Per Replacement	
	% Savings per Account
COM Urinals	50.0%
INST Urinals	50.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
Existing measure. Should test program after 10 years and continue if savings and costs are effective.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$38,963	\$31,170	\$70,133
2017	\$40,349	\$32,279	\$72,628
2018	\$41,784	\$33,427	\$75,211
2019	\$43,270	\$34,616	\$77,885
2020	\$44,808	\$35,847	\$80,655
2021	\$46,555	\$37,244	\$83,799
2022	\$48,370	\$38,696	\$87,065
2023	\$50,255	\$40,204	\$90,459
2024	\$52,214	\$41,771	\$93,985
2025	\$54,249	\$43,399	\$97,648
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets			
View:	Accounts		
	COM	INST	Total
2016	14	1	16
2017	15	1	16
2018	15	1	17
2019	16	1	17
2020	16	2	18
2021	17	2	19
2022	18	2	19
2023	18	2	20
2024	19	2	21
2025	20	2	22
2026	0	0	0
2027	0	0	0
2028	0	0	0
2029	0	0	0
2030	0	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.000461
2017	0.000937
2018	0.001426
2019	0.001928
2020	0.002439
2021	0.002956
2022	0.003482
2023	0.004013
2024	0.004551
2025	0.005094
2026	0.005047
2027	0.004999
2028	0.004951
2029	0.004902
2030	0.004853

Overview	
Name	Irrigation Water Surveys (Water)
Abbr	14
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	3
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
INST	\$1,500.00	\$1,000.00	1

Administration Costs	
Markup Percentage	30%

Description
 All public and private irrigators of landscapes would be eligible for free landscape water surveys upon request. Normally those with high water use would be targeted and provided a customized report. Assume 10 percent of large turf areas are surveyed per year.

Customer Classes					
	5	MF	COM	INST	2ndUse
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	5	MF	COM	INST	2ndUse
Toilets				<input type="checkbox"/>	
Urinals				<input type="checkbox"/>	
Faucets				<input type="checkbox"/>	
Showers				<input type="checkbox"/>	
Dishwashers				<input type="checkbox"/>	
Clothes Washers				<input type="checkbox"/>	
Process					
Kitchen Spray Rinse				<input type="checkbox"/>	
Internal Leakage				<input type="checkbox"/>	
Baths					
Other				<input type="checkbox"/>	
Irrigation				<input checked="" type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Down					
Car Washing					
External Leakage				<input checked="" type="checkbox"/>	
Outdoor					
Hotel-Motel					
Cooling				<input type="checkbox"/>	

Results	
Average Water Savings (mgd)	
0.030775	
Lifetime Savings - Present Value (\$)	
Utility	\$731,610
Community	\$731,610
Lifetime Costs - Present Value (\$)	
Utility	\$484,054
Community	\$732,287
Benefit to Cost Ratio	
Utility	1.51
Community	1.00
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$957

End Use Savings Per Replacement	
	% Savings per Account
INST Irrigation	15.0%
INST External Leakage	15.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	2.000%
Only Effects New Accts	<input type="checkbox"/>

Comments
 Not an existing measure. Should test program after 10 years and continue if savings and costs are effective.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$10,483	\$5,376	\$15,859
2017	\$10,856	\$5,567	\$16,423
2018	\$11,242	\$5,765	\$17,007
2019	\$11,642	\$5,970	\$17,612
2020	\$12,056	\$6,182	\$18,238
2021	\$12,525	\$6,423	\$18,949
2022	\$13,014	\$6,674	\$19,687
2023	\$13,521	\$6,934	\$20,455
2024	\$14,048	\$7,204	\$21,252
2025	\$14,595	\$7,485	\$22,080
2026	\$15,071	\$7,729	\$22,800
2027	\$15,563	\$7,981	\$23,544
2028	\$16,070	\$8,241	\$24,312
2029	\$16,594	\$8,510	\$25,104
2030	\$17,135	\$8,787	\$25,923

Targets		
View:	Accounts	
	INST	Total
2016	5	5
2017	6	6
2018	6	6
2019	6	6
2020	6	6
2021	6	6
2022	7	7
2023	7	7
2024	7	7
2025	7	7
2026	8	8
2027	8	8
2028	8	8
2029	9	9
2030	9	9

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.005084
2017	0.010349
2018	0.015801
2019	0.016363
2020	0.016945
2021	0.017567
2022	0.018233
2023	0.018943
2024	0.019682
2025	0.020449
2026	0.021201
2027	0.021936
2028	0.022651
2029	0.023390
2030	0.024152

Overview	
Name	Xeriscape Demonstration Gard
Abbr	15
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	10
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$900.00	\$2,000.00	1

Administration Costs	
Markup Percentage	10%

Description
 Donate or acquire a portion of public or private land to create a demonstration garden displaying living examples of low water-using gardens and landscaping. The Utility would provide signs and brochures to educate those people visiting the garden.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	%	MF	COM	INST	2ndUs
Toilets	<input type="checkbox"/>				
Urinals					
Faucets	<input type="checkbox"/>				
Show ers	<input type="checkbox"/>				
Dish washers	<input type="checkbox"/>				
Clothes Washers	<input type="checkbox"/>				
Process					
Kitchen Spray Rinse					
Internal Leakage	<input type="checkbox"/>				
Baths	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Irrigation	<input checked="" type="checkbox"/>				
Pools	<input type="checkbox"/>				
Wash Down	<input type="checkbox"/>				
Car Washing	<input type="checkbox"/>				
External Leakage	<input type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	0.088543
Lifetime Savings - Present Value (\$)	
Utility	\$2,019,370
Community	\$2,019,370
Lifetime Costs - Present Value (\$)	
Utility	\$2,327,520
Community	\$7,029,581
Benefit to Cost Ratio	
Utility	0.87
Community	0.29
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$1,599

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	40.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.100%
Only Effects New Accts	<input type="checkbox"/>

Comments

Existing measure. Two gardens completed. Possibly combine with Public Information Program. The goal of our garden is to encourage large-scale replacement of traditional landscaping with xeriscaping or the xeriscaping of new homes. The utility cost of \$900 represents a \$1M capital cost for garden plus \$75k per year O&M over 45 years, with a total of 4,800 participants over 45 years. The customer cost of \$2,000 represents the landscape follow-up work.
 The savings per account irrigation of 40% is based on replacing turf with xeriscape. Accounts targeted per year = 0.1%.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$50,406	\$101,829	\$152,235
2017	\$52,198	\$105,451	\$157,649
2018	\$54,055	\$109,201	\$163,256
2019	\$55,977	\$113,085	\$169,062
2020	\$57,968	\$117,107	\$175,074
2021	\$60,227	\$121,671	\$181,898
2022	\$62,575	\$126,414	\$188,989
2023	\$65,014	\$131,341	\$196,355
2024	\$67,548	\$136,461	\$204,008
2025	\$70,181	\$141,779	\$211,960
2026	\$72,469	\$146,403	\$218,872
2027	\$74,832	\$151,177	\$226,009
2028	\$77,272	\$156,106	\$233,379
2029	\$79,792	\$161,196	\$240,989
2030	\$82,394	\$166,453	\$248,847

Targets		
View:	Accounts	
	SF	Total
2016	51	51
2017	53	53
2018	55	55
2019	57	57
2020	59	59
2021	61	61
2022	63	63
2023	66	66
2024	68	68
2025	71	71
2026	73	73
2027	76	76
2028	78	78
2029	81	81
2030	83	83

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.004996
2017	0.010169
2018	0.015526
2019	0.021074
2020	0.026819
2021	0.032788
2022	0.038989
2023	0.045433
2024	0.052127
2025	0.059082
2026	0.061269
2027	0.063512
2028	0.065813
2029	0.068174
2030	0.070595

Overview	
Name	Train Landscape Maintenance
Abbr	16
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	5
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
MF	\$100.00	\$500.00	1
COM	\$100.00	\$500.00	1
INST	\$100.00	\$500.00	1

Administration Costs	
Markup Percentage	30%

Description
 Utility would sponsor training for managers and workers in landscape maintenance methods that will save irrigation water. Work with USU Extension. QWEL program certification.

Customer Classes					
	\$	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	\$	MF	COM	INST	2ndUs
Toilets		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Urinals		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Faucets		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Show ers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dishw ashers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Clothes Washers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Process			<input type="checkbox"/>		
itchen Spray Rinse			<input type="checkbox"/>		
Internal Leakage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Baths		<input type="checkbox"/>			
Other		<input type="checkbox"/>		<input type="checkbox"/>	
Irrigation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Pools		<input type="checkbox"/>		<input type="checkbox"/>	
Wash Down		<input type="checkbox"/>			
Car Washing		<input type="checkbox"/>			
External Leakage		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Outdoor					
Hotel-Motel			<input type="checkbox"/>		
Cooling			<input type="checkbox"/>	<input type="checkbox"/>	

Comments
 Existing measure. Should test program after 10 years and continue if savings and costs are effective. Educate 50% of contractors over 5 years.

Results	
Average Water Savings (mgd)	
0.025408	
Lifetime Savings - Present Value (\$)	
Utility	\$596,596
Community	\$596,596
Lifetime Costs - Present Value (\$)	
Utility	\$164,014
Community	\$794,838
Benefit to Cost Ratio	
Utility	3.64
Community	0.75
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$393

End Use Savings Per Replacement	
	% Savings per Account
MF Irrigation	5.0%
COM Irrigation	5.0%
INST Irrigation	5.0%
MF External Leakage	10.0%
COM External Leakage	10.0%
INST External Leakage	10.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$3,552	\$13,661	\$17,213
2017	\$3,678	\$14,147	\$17,825
2018	\$3,809	\$14,650	\$18,459
2019	\$3,945	\$15,171	\$19,116
2020	\$4,085	\$15,711	\$19,796
2021	\$4,244	\$16,323	\$20,567
2022	\$4,409	\$16,960	\$21,369
2023	\$4,581	\$17,621	\$22,202
2024	\$4,760	\$18,307	\$23,067
2025	\$4,945	\$19,021	\$23,966
2026	\$5,107	\$19,641	\$24,748
2027	\$5,273	\$20,282	\$25,555
2028	\$5,445	\$20,943	\$26,388
2029	\$5,623	\$21,626	\$27,249
2030	\$5,806	\$22,331	\$28,137

Targets				
View:	Accounts			
	MF	COM	INST	Total
2016	12	14	1	27
2017	12	15	1	28
2018	13	15	1	29
2019	13	16	1	30
2020	13	16	2	31
2021	14	17	2	33
2022	15	18	2	34
2023	15	18	2	35
2024	16	19	2	37
2025	16	20	2	38
2026	17	20	2	39
2027	17	21	2	41
2028	18	22	2	42
2029	19	23	2	43
2030	19	23	2	45

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.002612
2017	0.005318
2018	0.008119
2019	0.011020
2020	0.014024
2021	0.014533
2022	0.015071
2023	0.015639
2024	0.016239
2025	0.016872
2026	0.017506
2027	0.018142
2028	0.018777
2029	0.019411
2030	0.020044

Overview	
Name	Real Water Loss Reduction
Abbr	17
Category	
Measure Type	Water Loss Measure
Time Period	
First Year	2016
Backlog Costs	
Total Backlog Work Costs	\$2,921,667
Years to Complete Backlog	10
Maintenance Costs	
Annual Maintenance Costs	\$275,000
Target	
Total GPCD Reduction	6.3

Description

Measure covers efforts to find and repair leaks in the distribution system to reduce real water loss and take other actions (such as meter replacement) to reduce apparent water losses thereby improving the system water balance. A ten year program to reduce unaccounted for water to 10 percent of production or less is proposed for this measure. Actions could include installation of data loggers and proactive leak detection; accelerated meter replacement could be done over 10 years. Leak repairs would be handled by existing crews at no extra cost. Specific goals and methods to be developed by Utility Operations Department.

Results	
Average Water Savings (mgd)	
2.133287	
Lifetime Savings - Present Value (\$)	
Utility	\$48,857,485
Community	\$48,857,485
Lifetime Costs - Present Value (\$)	
Utility	\$7,084,477
Community	\$7,084,477
Benefit to Cost Ratio	
Utility	6.90
Community	6.90
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$202

Comments

Existing measure.

Costs	
	Utility
2016	\$292,167
2017	\$292,167
2018	\$292,167
2019	\$292,167
2020	\$292,167
2021	\$292,167
2022	\$292,167
2023	\$292,167
2024	\$292,167
2025	\$292,167
2026	\$275,000
2027	\$275,000
2028	\$275,000
2029	\$275,000
2030	\$275,000

Targets	
	Projected NRW Percent
2016	9.8%
2017	9.6%
2018	9.4%
2019	9.2%
2020	9.0%
2021	8.8%
2022	8.6%
2023	8.4%
2024	8.2%
2025	8.0%
2026	8.0%
2027	8.0%
2028	8.0%
2029	8.0%
2030	8.0%

Water Savings	
	Total Savings
2016	0.107633
2017	0.222922
2018	0.346276
2019	0.478121
2020	0.618907
2021	0.771637
2022	0.935332
2023	1.110617
2024	1.298145
2025	1.498605
2026	1.547471
2027	1.597931
2028	1.650036
2029	1.703840
2030	1.759399

Overview	
Name	Turf Removal
Abbr	18
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2030		
Measure Length	15		

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$1,500.00	\$1,500.00	1
MF	\$2,500.00	\$2,500.00	1
COM	\$2,500.00	\$2,500.00	1
INST	\$2,500.00	\$2,500.00	1

Administration Costs	
Markup Percentage	30%

Description
 A \$1.50 per square foot incentive is available for removing existing turf and replacing with desert landscaping or synthetic turf. Maximum rebate of \$5,000. Average rebate of \$1,500 for SF accounts and \$2,500 for Non-SF accounts. The replacement of irrigated vegetation with desert landscaping or synthetic turf may significantly reduce outdoor watering needs.

Customer Classes				
	SF	MF	COM	INST
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

End Uses				
	SF	MF	COM	INST
Toilets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Showers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dishwashers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen Spray Rinse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wash Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel-Motel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments

Results	
Average Water Savings (mgd)	
0.346048	
Lifetime Savings - Present Value (\$)	
Utility	\$8,408,983
Community	\$8,408,983
Lifetime Costs - Present Value (\$)	
Utility	\$4,583,437
Community	\$8,109,157
Benefit to Cost Ratio	
Utility	1.83
Community	1.04
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$806

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	40.0%
MF Irrigation	40.0%
COM Irrigation	40.0%
INST Irrigation	40.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.250%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$292,608	\$225,083	\$517,692
2017	\$303,015	\$233,088	\$536,103
2018	\$313,791	\$241,378	\$555,169
2019	\$324,951	\$249,962	\$574,914
2020	\$336,508	\$258,852	\$595,360
2021	\$349,624	\$268,942	\$618,566
2022	\$363,252	\$279,425	\$642,677
2023	\$377,411	\$290,316	\$667,727
2024	\$392,122	\$301,632	\$693,754
2025	\$407,406	\$313,389	\$720,795
2026	\$420,690	\$323,608	\$744,298
2027	\$434,408	\$334,160	\$768,568
2028	\$448,573	\$345,056	\$793,630
2029	\$463,200	\$356,308	\$819,508
2030	\$478,304	\$367,926	\$846,231

Targets					
View:	Accounts				
	SF	MF	COM	INST	Total
2016	127	6	7	1	141
2017	132	6	7	1	146
2018	137	6	8	1	151
2019	141	7	8	1	157
2020	146	7	8	1	162
2021	152	7	9	1	168
2022	158	7	9	1	175
2023	164	8	9	1	182
2024	171	8	10	1	189
2025	177	8	10	1	196
2026	183	8	10	1	203
2027	189	9	11	1	209
2028	195	9	11	1	216
2029	201	9	11	1	223
2030	208	10	12	1	230

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.021387
2017	0.043534
2018	0.066470
2019	0.090220
2020	0.114816
2021	0.140370
2022	0.166920
2023	0.194505
2024	0.223166
2025	0.252943
2026	0.283692
2027	0.315443
2028	0.348229
2029	0.382085
2030	0.417044

Overview	
Name	Washer Rebates for High Effici
Abbr	19
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2027		
Measure Length	12		

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$200.00	\$550.00	1

Administration Costs	
Markup Percentage	30%

Description
Homeowners would be eligible to receive a rebate on a new water efficient clothes washer. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input type="checkbox"/>				
Urinals					
Faucets	<input type="checkbox"/>				
Show ers	<input type="checkbox"/>				
Dishw ashers	<input type="checkbox"/>				
Clothes Washers	<input checked="" type="checkbox"/>				
Process					
itchen Spray Rinse					
Internal Leakage	<input type="checkbox"/>				
Baths	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Irrigation	<input type="checkbox"/>				
Pools	<input type="checkbox"/>				
Wash Dow n	<input type="checkbox"/>				
Car Washing	<input type="checkbox"/>				
External Leakage	<input type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Results	
Average Water Savings (mgd)	
0.036525	
Lifetime Savings - Present Value (\$)	
Utility	\$950,978
Community	\$3,472,380
Lifetime Costs - Present Value (\$)	
Utility	\$823,006
Community	\$2,563,982
Benefit to Cost Ratio	
Utility	1.16
Community	1.35
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$1,371

End Use Savings Per Replacement	
	% Savings per Account
SF Clothes Washers	62.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
Not an existing measure. Utility cost includes inspection costs. This measure used to be offered by St. George City but is no longer being offered. Should test program after 10 years and continue if savings and costs are effective. Assume change from a 34 gallons per load machine to a 13 gallons per load.

Costs			
View	Summary		
	Utility	Customer	Total
2016	\$66,189	\$140,015	\$206,205
2017	\$68,543	\$144,995	\$213,538
2018	\$70,981	\$150,152	\$221,132
2019	\$73,505	\$155,492	\$228,997
2020	\$76,119	\$161,022	\$237,141
2021	\$79,086	\$167,298	\$246,384
2022	\$82,169	\$173,819	\$255,988
2023	\$85,372	\$180,594	\$265,966
2024	\$88,699	\$187,633	\$276,333
2025	\$92,157	\$194,947	\$287,103
2026	\$95,162	\$201,304	\$296,465
2027	\$98,265	\$207,868	\$306,132
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View	Accounts	
	SF	Total
2016	255	255
2017	264	264
2018	273	273
2019	283	283
2020	293	293
2021	304	304
2022	316	316
2023	328	328
2024	341	341
2025	354	354
2026	366	366
2027	378	378
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.004036
2017	0.008153
2018	0.012344
2019	0.016601
2020	0.020863
2021	0.025105
2022	0.029301
2023	0.033424
2024	0.037449
2025	0.041352
2026	0.045134
2027	0.048932
2028	0.047793
2029	0.046754
2030	0.045802

Overview	
Name	CII Surveys
Abbr	20
Category	
Measure Type	Standard Measure

Time Period	
First Year	2016
Last Year	2030
Measure Length	15

Measure Life	
Permanent	<input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$2,000.00	\$2,000.00	1
INST	\$2,000.00	\$2,000.00	1

Administration Costs	
Markup Percentage	25%

Description
High water use accounts would be offered a free water survey that would evaluate ways for the business to save water and money.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Customer Classes					
	MF	COM	INST	2nd/Us	
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	MF	COM	INST	2nd/Us	
Toilets		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Urinals		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Faucets		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Showers		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Dishwashers		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Clothes Washers		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Process		<input checked="" type="checkbox"/>			
Kitchen Spray Rinse		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Internal Leakage		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Baths					
Other			<input checked="" type="checkbox"/>		
Irrigation		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Pools			<input checked="" type="checkbox"/>		
Wash Down					
Car Washing					
External Leakage		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Outdoor					
Hotel-Motel		<input checked="" type="checkbox"/>			
Cooling		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Comments
Existing measure. Should test program after 10 years and continue if savings and costs are effective.

Results	
Average Water Savings (mgd)	0.126720
Lifetime Savings - Present Value (\$)	
Utility	\$3,082,987
Community	\$5,447,304
Lifetime Costs - Present Value (\$)	
Utility	\$610,318
Community	\$1,098,573
Benefit to Cost Ratio	
Utility	5.05
Community	4.96
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$293

End Use Savings Per Replacement	
	% Savings per Account
COM Toilets	10.0%
COM Urinals	10.0%
COM Faucets	10.0%
COM Showers	10.0%
COM Dishwashers	10.0%
COM Process	10.0%
COM Kitchen Spray Rinse	10.0%
COM Internal Leakage	10.0%
COM External Leakage	10.0%
INST Toilets	10.0%
INST Urinals	10.0%
INST Faucets	10.0%
INST Showers	10.0%
INST Dishwashers	10.0%
INST Internal Leakage	10.0%
INST Other	10.0%
INST External Leakage	10.0%
COM Irrigation	10.0%
INST Irrigation	10.0%
COM Hotel-Motel	10.0%
COM Clothes Washers	10.0%
INST Clothes Washers	10.0%
INST Kitchen Spray Rinse	10.0%
INST Pools	10.0%
COM Cooling	10.0%
INST Cooling	10.0%

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$38,963	\$31,170	\$70,133
2017	\$40,349	\$32,279	\$72,628
2018	\$41,784	\$33,427	\$75,211
2019	\$43,270	\$34,616	\$77,885
2020	\$44,808	\$35,847	\$80,655
2021	\$46,555	\$37,244	\$83,799
2022	\$48,370	\$38,696	\$87,065
2023	\$50,255	\$40,204	\$90,459
2024	\$52,214	\$41,771	\$93,985
2025	\$54,249	\$43,399	\$97,648
2026	\$56,018	\$44,814	\$100,832
2027	\$57,845	\$46,276	\$104,120
2028	\$59,731	\$47,785	\$107,516
2029	\$61,679	\$49,343	\$111,021
2030	\$63,690	\$50,952	\$114,642

Targets			
View:	Accounts		
	COM	INST	Total
2016	14	1	16
2017	15	1	16
2018	15	1	17
2019	16	1	17
2020	16	2	18
2021	17	2	19
2022	18	2	19
2023	18	2	20
2024	19	2	21
2025	20	2	22
2026	20	2	22
2027	21	2	23
2028	22	2	24
2029	23	2	25
2030	23	2	25

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.007901
2017	0.016082
2018	0.024553
2019	0.033320
2020	0.042393
2021	0.051806
2022	0.061576
2023	0.071713
2024	0.082232
2025	0.093145
2026	0.104425
2027	0.116062
2028	0.128068
2029	0.140454
2030	0.153233

Overview	
Name	School Building Retrofit
Abbr	21
Category	
Measure Type	Standard Measure

Time Period	
First Year	2016
Last Year	2025
Measure Length	10

Measure Life	
Permanent	<input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
INST	\$5,000.00	\$10,000.00	1

Administration Costs	
Markup Percentage	30%

Description
School receives a grant to replace fixtures and upgrade irrigation systems.

Customer Classes					
	SF	MF	COM	INST	2ndUsr
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUsr
Toilets				<input checked="" type="checkbox"/>	
Urinals				<input checked="" type="checkbox"/>	
Faucets				<input checked="" type="checkbox"/>	
Show ers				<input checked="" type="checkbox"/>	
Dishw ashers				<input checked="" type="checkbox"/>	
Clothes Washers				<input checked="" type="checkbox"/>	
Process					
itchen Spray Rinse				<input checked="" type="checkbox"/>	
Internal Leakage				<input checked="" type="checkbox"/>	
Baths					
Other				<input checked="" type="checkbox"/>	
Irrigation				<input checked="" type="checkbox"/>	
Pools				<input checked="" type="checkbox"/>	
Wash Dow n					
Car Washing					
External Leakage				<input checked="" type="checkbox"/>	
Outdoor					
Hotel-Motel					
Cooling				<input checked="" type="checkbox"/>	

Comments
Patterned after MWD of Southern California's school retrofit program. Should test program after 10 years and continue if savings and costs are effective. Do one older school/yr; 10 total.

Results	
Average Water Savings (mgd)	
0.025822	
Lifetime Savings - Present Value (\$)	
Utility	\$655,303
Community	\$1,104,664
Lifetime Costs - Present Value (\$)	
Utility	\$53,955
Community	\$136,963
Benefit to Cost Ratio	
Utility	12.15
Community	8.07
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$127

End Use Savings Per Replacement	
	% Savings per Account
INST Toilets	25.0%
INST Urinals	25.0%
INST Faucets	25.0%
INST Showers	25.0%
INST Dishwashers	25.0%
INST Internal Leakage	25.0%
INST Other	25.0%
INST Irrigation	25.0%
INST External Leakage	25.0%
INST Clothes Washers	25.0%
INST Kitchen Spray Rinse	25.0%
INST Pools	25.0%
INST Cooling	25.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.300%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$5,241	\$8,064	\$13,305
2017	\$5,428	\$8,350	\$13,778
2018	\$5,621	\$8,647	\$14,268
2019	\$5,821	\$8,955	\$14,776
2020	\$6,028	\$9,273	\$15,301
2021	\$6,263	\$9,635	\$15,898
2022	\$6,507	\$10,011	\$16,517
2023	\$6,760	\$10,401	\$17,161
2024	\$7,024	\$10,806	\$17,830
2025	\$7,298	\$11,227	\$18,525
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View:	Accounts	
	INST	Total
2016	1	1
2017	1	1
2018	1	1
2019	1	1
2020	1	1
2021	1	1
2022	1	1
2023	1	1
2024	1	1
2025	1	1
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.002444
2017	0.004975
2018	0.007597
2019	0.010311
2020	0.013122
2021	0.016042
2022	0.019077
2023	0.022229
2024	0.025505
2025	0.028908
2026	0.028908
2027	0.028908
2028	0.028908
2029	0.028908
2030	0.028908

Overview	
Name	Billing Report Educational Tool
Abbr	22
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	2
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$12.00	\$0.00	1

Administration Costs	
Markup Percentage	10%

Description
 Example: Water Smart Software with online access to customer billed consumption and customized suggestions to save water.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	15.000%
Only Effects New Accts	<input type="checkbox"/>

Costs			
Year	Summary	Customer	Total
2016	\$100,811	\$0	\$100,811
2017	\$104,396	\$0	\$104,396
2018	\$108,109	\$0	\$108,109
2019	\$111,954	\$0	\$111,954
2020	\$115,936	\$0	\$115,936
2021	\$120,455	\$0	\$120,455
2022	\$125,150	\$0	\$125,150
2023	\$130,028	\$0	\$130,028
2024	\$135,096	\$0	\$135,096
2025	\$140,362	\$0	\$140,362
2026	\$144,939	\$0	\$144,939
2027	\$149,665	\$0	\$149,665
2028	\$154,545	\$0	\$154,545
2029	\$159,584	\$0	\$159,584
2030	\$164,788	\$0	\$164,788

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>				
Urinals					
Faucets	<input checked="" type="checkbox"/>				
Showers	<input checked="" type="checkbox"/>				
Dishwashers	<input checked="" type="checkbox"/>				
Clothes Washers	<input checked="" type="checkbox"/>				
Process					
Kitchen Spray Rinse					
Internal Leakage	<input checked="" type="checkbox"/>				
Baths	<input checked="" type="checkbox"/>				
Other	<input checked="" type="checkbox"/>				
Irrigation	<input checked="" type="checkbox"/>				
Pools	<input checked="" type="checkbox"/>				
Wash Down	<input checked="" type="checkbox"/>				
Car Washing	<input checked="" type="checkbox"/>				
External Leakage	<input checked="" type="checkbox"/>				
Outdoor					
Hotel-Motel					
Cooling					

Comments	

Results	
Average Water Savings (mgd)	
0.791064	
Lifetime Savings - Present Value (\$)	
Utility	\$19,017,732
Community	\$33,840,545
Lifetime Costs - Present Value (\$)	
Utility	\$4,655,040
Community	\$4,655,040
Benefit to Cost Ratio	
Utility	4.09
Community	7.27
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$358

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	5.0%
SF Faucets	5.0%
SF Showers	5.0%
SF Dishwashers	5.0%
SF Clothes Washers	5.0%
SF Baths	5.0%
SF Internal Leakage	5.0%
SF Other	5.0%
SF Irrigation	5.0%
SF Pools	5.0%
SF Wash Down	5.0%
SF Car Washing	5.0%
SF External Leakage	5.0%

Targets		
Year	Accounts	Total
2016	7,637	7,637
2017	7,909	7,909
2018	8,190	8,190
2019	8,481	8,481
2020	8,783	8,783
2021	9,125	9,125
2022	9,481	9,481
2023	9,851	9,851
2024	10,235	10,235
2025	10,633	10,633
2026	10,980	10,980
2027	11,338	11,338
2028	11,708	11,708
2029	12,090	12,090
2030	12,484	12,484

Water Savings (mgd)	
Year	Total Savings (mgd)
2016	0.198446
2017	0.403626
2018	0.417620
2019	0.432075
2020	0.446953
2021	0.463027
2022	0.480390
2023	0.498343
2024	0.516913
2025	0.536124
2026	0.554329
2027	0.571478
2028	0.589207
2029	0.607531
2030	0.626464

Overview	
Name	Mobile Home Park Submetering
Abbr	23
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2021		
Measure Length	6		

Fixture Costs			
	Utility	Customer	Fix/Acct
MF	\$500.00	\$1,000.00	1

Administration Costs	
Markup Percentage	25%

Description
 Require or provide a partial cost rebate to meter all remaining mobile home parks, multi-family residences or homeowners associations that are currently master metered but not separately metered.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$7,336	\$11,737	\$19,073
2017	\$7,597	\$12,155	\$19,752
2018	\$7,867	\$12,587	\$20,454
2019	\$8,147	\$13,035	\$21,182
2020	\$8,437	\$13,498	\$21,935
2021	\$8,765	\$14,025	\$22,790
2022	\$0	\$0	\$0
2023	\$0	\$0	\$0
2024	\$0	\$0	\$0
2025	\$0	\$0	\$0
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Customer Classes					
	%	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

End Uses					
	%	MF	COM	INST	2ndUs
Toilets		<input checked="" type="checkbox"/>			
Urinals					
Faucets		<input checked="" type="checkbox"/>			
Showers		<input checked="" type="checkbox"/>			
Dishwashers		<input checked="" type="checkbox"/>			
Clothes Washers		<input checked="" type="checkbox"/>			
Process					
Kitchen Spray Rinse					
Internal Leakage		<input checked="" type="checkbox"/>			
Baths		<input checked="" type="checkbox"/>			
Other		<input checked="" type="checkbox"/>			
Irrigation		<input checked="" type="checkbox"/>			
Pools		<input checked="" type="checkbox"/>			
Wash Down		<input checked="" type="checkbox"/>			
Car Washing		<input checked="" type="checkbox"/>			
External Leakage		<input checked="" type="checkbox"/>			
Outdoor					
Hotel-Motel					
Cooling					

Comments	

Targets		
View:	Accounts	
	MF	Total
2016	12	12
2017	12	12
2018	13	13
2019	13	13
2020	13	13
2021	14	14
2022	0	0
2023	0	0
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Results	
Average Water Savings (mgd)	
0.013297	
Lifetime Savings - Present Value (\$)	
Utility	\$351,864
Community	\$709,010
Lifetime Costs - Present Value (\$)	
Utility	\$44,629
Community	\$116,034
Benefit to Cost Ratio	
Utility	7.88
Community	6.11
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$204

End Use Savings Per Replacement	
	% Savings per Account
MF Toilets	15.0%
MF Faucets	15.0%
MF Showers	15.0%
MF Dishwashers	15.0%
MF Clothes Washers	15.0%
MF Baths	15.0%
MF Internal Leakage	15.0%
MF Other	15.0%
MF Irrigation	15.0%
MF Pools	15.0%
MF Wash Down	15.0%
MF Car Washing	15.0%
MF External Leakage	15.0%

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.002228
2017	0.004530
2018	0.006909
2019	0.009367
2020	0.011903
2021	0.014528
2022	0.014501
2023	0.014472
2024	0.014441
2025	0.014408
2026	0.014375
2027	0.014345
2028	0.014316
2029	0.014289
2030	0.014263

Overview	
Name	Install High Efficiency Fixtures
Abbr	24
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2025		
Measure Length	10		

Fixture Costs			
	Utility	Customer	Fix/Acct
INST	\$500.00	\$1,000.00	10

Administration Costs	
Markup Percentage	15%

Description
Provide rebates or grants to install high efficiency faucets, toilets, urinals and showerheads in local and state government facilities.

Customer Classes					
	\$	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	\$	MF	COM	INST	2ndUs
Toilets				<input checked="" type="checkbox"/>	
Urinals				<input checked="" type="checkbox"/>	
Faucets				<input checked="" type="checkbox"/>	
Showers				<input checked="" type="checkbox"/>	
Dishwashers				<input type="checkbox"/>	
Clothes Washers				<input type="checkbox"/>	
Process					
Kitchen Spray Rinse				<input type="checkbox"/>	
Internal Leakage				<input type="checkbox"/>	
Baths					
Other				<input type="checkbox"/>	
Irrigation				<input type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Down					
Car Washing					
External Leakage				<input type="checkbox"/>	
Outdoor					
Hotel-Motel					
Cooling				<input type="checkbox"/>	

Results	
Average Water Savings (mgd)	
0.019642	
Lifetime Savings - Present Value (\$)	
Utility	\$498,467
Community	\$894,272
Lifetime Costs - Present Value (\$)	
Utility	\$79,549
Community	\$217,895
Benefit to Cost Ratio	
Utility	6.27
Community	4.10
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$246

End Use Savings Per Replacement	
	% Savings per Account
INST Toilets	63.0%
INST Urinals	50.0%
INST Faucets	75.0%
INST Showers	50.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$7,728	\$13,440	\$21,167
2017	\$8,003	\$13,917	\$21,920
2018	\$8,287	\$14,412	\$22,700
2019	\$8,582	\$14,925	\$23,507
2020	\$8,887	\$15,456	\$24,343
2021	\$9,234	\$16,058	\$25,292
2022	\$9,593	\$16,684	\$26,278
2023	\$9,967	\$17,335	\$27,302
2024	\$10,356	\$18,010	\$28,366
2025	\$10,760	\$18,712	\$29,472
2026	\$0	\$0	\$0
2027	\$0	\$0	\$0
2028	\$0	\$0	\$0
2029	\$0	\$0	\$0
2030	\$0	\$0	\$0

Targets		
View:	Accounts	
	INST	Total
2016	1	1
2017	1	1
2018	1	1
2019	1	1
2020	2	2
2021	2	2
2022	2	2
2023	2	2
2024	2	2
2025	2	2
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.001859
2017	0.003785
2018	0.005778
2019	0.007843
2020	0.009981
2021	0.012203
2022	0.014511
2023	0.016909
2024	0.019401
2025	0.021989
2026	0.021989
2027	0.021989
2028	0.021989
2029	0.021989
2030	0.021989

Overview	
Name	Install or Rebate High Efficiency
Abbr	25
Category	
Measure Type	Standard Measure

Time Period	
First Year	2016
Last Year	2030
Measure Length	15

Measure Life	
Permanent	<input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$200.00	\$200.00	10
INST	\$200.00	\$200.00	10

Administration Costs	
Markup Percentage	25%

Description
 Consider direct install program, rebates or grants for installation of high efficiency faucet fixtures in all or selected high-use commercial and institutional buildings.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets			<input type="checkbox"/>	<input type="checkbox"/>	
Urinals			<input type="checkbox"/>	<input type="checkbox"/>	
Faucets			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Showers			<input type="checkbox"/>	<input type="checkbox"/>	
Dishwashers			<input type="checkbox"/>	<input type="checkbox"/>	
Clothes Washers			<input type="checkbox"/>	<input type="checkbox"/>	
Process			<input type="checkbox"/>		
Kitchen Spray Rinse			<input type="checkbox"/>	<input type="checkbox"/>	
Internal Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Baths					
Other				<input type="checkbox"/>	
Irrigation			<input type="checkbox"/>	<input type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Down					
Car Washing					
External Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Outdoor					
Hotel-Motel			<input type="checkbox"/>		
Cooling			<input type="checkbox"/>	<input type="checkbox"/>	

Results	
Average Water Savings (mgd)	0.025248
Lifetime Savings - Present Value (\$)	
Utility	\$613,522
Community	\$1,170,018
Lifetime Costs - Present Value (\$)	
Utility	\$305,159
Community	\$549,287
Benefit to Cost Ratio	
Utility	2.01
Community	2.13
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$735

End Use Savings Per Replacement	
	% Savings per Account
COM Faucets	75.0%
INST Faucets	75.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.250%
Only Effects New Accts	<input type="checkbox"/>

Comments
 Assume replace a 2.0 gpm faucet down to a 0.5 gpm faucet.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$19,481	\$15,585	\$35,067
2017	\$20,174	\$16,139	\$36,314
2018	\$20,892	\$16,713	\$37,605
2019	\$21,635	\$17,308	\$38,943
2020	\$22,404	\$17,923	\$40,328
2021	\$23,278	\$18,622	\$41,900
2022	\$24,185	\$19,348	\$43,533
2023	\$25,128	\$20,102	\$45,230
2024	\$26,107	\$20,886	\$46,992
2025	\$27,125	\$21,700	\$48,824
2026	\$28,009	\$22,407	\$50,416
2027	\$28,922	\$23,138	\$52,060
2028	\$29,865	\$23,892	\$53,758
2029	\$30,839	\$24,671	\$55,511
2030	\$31,845	\$25,476	\$57,321

Targets			
View:	Accounts		
	COM	INST	Total
2016	7	1	8
2017	7	1	8
2018	8	1	8
2019	8	1	9
2020	8	1	9
2021	9	1	9
2022	9	1	10
2023	9	1	10
2024	10	1	10
2025	10	1	11
2026	10	1	11
2027	11	1	12
2028	11	1	12
2029	11	1	12
2030	12	1	13

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.001560
2017	0.003176
2018	0.004850
2019	0.006583
2020	0.008377
2021	0.010241
2022	0.012179
2023	0.014191
2024	0.016282
2025	0.018455
2026	0.020698
2027	0.023015
2028	0.025407
2029	0.027877
2030	0.030428

Overview	
Name	Water Budgeting/ Monitoring
Abbr	26
Category	
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input checked="" type="checkbox"/>
Last Year	2030		
Measure Length	15		

Fixture Costs			
	Utility	Customer	Fix/Acct
COM	\$200.00	\$500.00	1
INST	\$200.00	\$500.00	1

Administration Costs	
Markup Percentage	25%

Description
 Website that provides feedback on irrigation water use (budget vs. actual).

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets			<input type="checkbox"/>	<input type="checkbox"/>	
Urinals			<input type="checkbox"/>	<input type="checkbox"/>	
Faucets			<input type="checkbox"/>	<input type="checkbox"/>	
Showers			<input type="checkbox"/>	<input type="checkbox"/>	
Dishwashers			<input type="checkbox"/>	<input type="checkbox"/>	
Clothes Washers			<input type="checkbox"/>	<input type="checkbox"/>	
Process			<input type="checkbox"/>	<input type="checkbox"/>	
Kitchen Spray Rinse			<input type="checkbox"/>	<input type="checkbox"/>	
Internal Leakage			<input type="checkbox"/>	<input type="checkbox"/>	
Baths					
Other				<input type="checkbox"/>	
Irrigation			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Pools				<input type="checkbox"/>	
Wash Down					
Car Washing					
External Leakage			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Outdoor					
Hotel-Motel			<input type="checkbox"/>		
Cooling			<input type="checkbox"/>	<input type="checkbox"/>	

Results	
Average Water Savings (mgd)	
0.068048	
Lifetime Savings - Present Value (\$)	
Utility	\$1,653,582
Community	\$1,653,582
Lifetime Costs - Present Value (\$)	
Utility	\$61,032
Community	\$183,096
Benefit to Cost Ratio	
Utility	27.09
Community	9.03
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$55

End Use Savings Per Replacement	
	% Savings per Account
COM Irrigation	10.0%
COM External Leakage	10.0%
INST Irrigation	10.0%
INST External Leakage	10.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Comments
 Modeled after MWDOC's Landscape Certification Program.

Costs			
View:	Summary		
	Utility	Customer	Total
2016	\$3,896	\$7,793	\$11,689
2017	\$4,035	\$8,070	\$12,105
2018	\$4,178	\$8,357	\$12,535
2019	\$4,327	\$8,654	\$12,981
2020	\$4,481	\$8,962	\$13,443
2021	\$4,656	\$9,311	\$13,967
2022	\$4,837	\$9,674	\$14,511
2023	\$5,026	\$10,051	\$15,077
2024	\$5,221	\$10,443	\$15,664
2025	\$5,425	\$10,850	\$16,275
2026	\$5,602	\$11,204	\$16,805
2027	\$5,784	\$11,569	\$17,353
2028	\$5,973	\$11,946	\$17,919
2029	\$6,168	\$12,336	\$18,504
2030	\$6,369	\$12,738	\$19,107

Targets			
View:	Accounts		
	COM	INST	Total
2016	14	1	16
2017	15	1	16
2018	15	1	17
2019	16	1	17
2020	16	2	18
2021	17	2	19
2022	18	2	19
2023	18	2	20
2024	19	2	21
2025	20	2	22
2026	20	2	22
2027	21	2	23
2028	22	2	24
2029	23	2	25
2030	23	2	25

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.004206
2017	0.008561
2018	0.013071
2019	0.017741
2020	0.022578
2021	0.027603
2022	0.032824
2023	0.038248
2024	0.043884
2025	0.049740
2026	0.055786
2027	0.062030
2028	0.068477
2029	0.075135
2030	0.082010

Overview	
Name	Require Efficient Toilets and Urinals
Abbr	27
Category	
Measure Type	Standard Measure

Time Period	Measure Life
First Year	2016
Last Year	2060
Measure Length	45
	Permanent <input checked="" type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$10.00	\$100.00	2
MF	\$10.00	\$200.00	5
COM	\$10.00	\$200.00	10
INST	\$10.00	\$200.00	10

Administration Costs	
Markup Percentage	10%

Description
 Require all new development to utilize High Efficiency Toilets (HETs)(1.28 gal/flush or less) and High Efficiency Urinals (HEUs) 0.5 gal/flush or less. City and County building departments to implement through normal permitting and inspection process.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>				

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input checked="" type="checkbox"/>				
Urinals	<input checked="" type="checkbox"/>				
Faucets	<input checked="" type="checkbox"/>				
Showers	<input type="checkbox"/>				
Dishwashers	<input type="checkbox"/>				
Clothes Washers	<input type="checkbox"/>				
Process	<input type="checkbox"/>				
Kitchen Spray Rinse	<input type="checkbox"/>				
Internal Leakage	<input type="checkbox"/>				
Baths	<input type="checkbox"/>				
Other	<input type="checkbox"/>				
Irrigation	<input type="checkbox"/>				
Pools	<input type="checkbox"/>				
Wash Down	<input type="checkbox"/>				
Car Washing	<input type="checkbox"/>				
External Leakage	<input type="checkbox"/>				
Outdoor	<input type="checkbox"/>				
Hotel-Motel	<input type="checkbox"/>				
Cooling	<input type="checkbox"/>				

Results	
Average Water Savings (mgd)	
0.971600	
Lifetime Savings - Present Value (\$)	
Utility	\$20,822,231
Community	\$27,718,495
Lifetime Costs - Present Value (\$)	
Utility	\$2,170,693
Community	\$27,369,823
Benefit to Cost Ratio	
Utility	9.59
Community	1.01
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$136

End Use Savings Per Replacement	
	% Savings per Account
SF Toilets	20.0%
SF Faucets	10.0%
MF Toilets	20.0%
MF Faucets	10.0%
COM Toilets	20.0%
COM Urinals	50.0%
COM Faucets	10.0%
INST Toilets	20.0%
INST Urinals	50.0%
INST Faucets	10.0%

Comments
 Ordinance.

Targets	
Target Method	Percentage
% of Accts Targeted / yr	100.000%
Only Effects New Accts	<input checked="" type="checkbox"/>

Costs			
View	Summary		
	Utility	Customer	Total
2016	\$60,606	\$703,562	\$764,168
2017	\$60,606	\$703,562	\$764,168
2018	\$62,761	\$728,583	\$791,345
2019	\$64,993	\$754,495	\$819,488
2020	\$67,305	\$781,328	\$848,633
2021	\$76,389	\$886,782	\$963,171
2022	\$79,366	\$921,347	\$1,000,713
2023	\$82,460	\$957,259	\$1,039,719
2024	\$85,674	\$994,572	\$1,080,246
2025	\$89,013	\$1,033,338	\$1,122,351
2026	\$77,368	\$898,154	\$975,522
2027	\$79,891	\$927,441	\$1,007,332
2028	\$82,496	\$957,682	\$1,040,179
2029	\$85,186	\$988,910	\$1,074,097
2030	\$87,964	\$1,021,157	\$1,109,121

Targets						
View	Accounts					
	SF	MF	COM	INST	Total	
2016	1,811	83	101	10	2,005	
2017	1,811	83	101	10	2,005	
2018	1,875	86	105	10	2,076	
2019	1,942	90	109	10	2,150	
2020	2,011	93	112	11	2,227	
2021	2,282	105	128	12	2,527	
2022	2,371	109	133	13	2,626	
2023	2,464	114	138	13	2,728	
2024	2,560	118	143	14	2,834	
2025	2,659	123	149	14	2,945	
2026	2,312	107	129	12	2,560	
2027	2,387	110	134	13	2,643	
2028	2,465	114	138	13	2,729	
2029	2,545	117	142	13	2,818	
2030	2,628	121	147	14	2,910	

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.034729
2017	0.069292
2018	0.104868
2019	0.141436
2020	0.178982
2021	0.221122
2022	0.264405
2023	0.308825
2024	0.354382
2025	0.401077
2026	0.441311
2027	0.482495
2028	0.524657
2029	0.567830
2030	0.612047

Overview	
Name	Efficient Outdoor Use Education and Tra
Abbr	28
Category	Default
Measure Type	Standard Measure

Time Period		Measure Life	
First Year	2016	Permanent	<input type="checkbox"/>
Last Year	2060	Years	10
Measure Length	45	Repeat	<input type="checkbox"/>

Fixture Costs			
	Utility	Customer	Fix/Acct
SF	\$25.00	\$25.00	1
MF	\$25.00	\$25.00	1
COM	\$25.00	\$25.00	1
INST	\$25.00	\$25.00	1

Administration Costs	
Markup Percentage	25%

Description
 WCWCD would offer, organize and sponsor a series of educational workshops for homeowners in efficient landscaping and irrigation principals. Utilize guest speakers, Xeriscape demonstration gardens, incentives, such as a nursery plant coupon.

Customer Classes					
	SF	MF	COM	INST	2ndUs
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

End Uses					
	SF	MF	COM	INST	2ndUs
Toilets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Urinals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Faucets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Show ers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dish washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clothes Washers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kitchen Spray Rinse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internal Leakage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Baths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irrigation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wash Down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car Washing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
External Leakage	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Outdoor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hotel-Motel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments
 Customer costs represent follow-up action costs. Utility cost represents advertising, day-of site coordination, etc. Measure includes 2 workshops per month with 10-30 participants each.

Results	
Average Water Savings (mgd)	
0.101663	
Lifetime Savings - Present Value (\$)	
Utility	\$2,318,596
Community	\$2,318,596
Lifetime Costs - Present Value (\$)	
Utility	\$406,775
Community	\$732,195
Benefit to Cost Ratio	
Utility	5.70
Community	3.17
Cost of Savings per Unit Volume (\$/mg)	
Utility	\$243

End Use Savings Per Replacement	
	% Savings per Account
SF Irrigation	5.0%
MF Irrigation	5.0%
COM Irrigation	5.0%
INST Irrigation	5.0%
SF External Leakage	5.0%
MF External Leakage	5.0%
COM External Leakage	5.0%
INST External Leakage	5.0%

Targets	
Target Method	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	<input type="checkbox"/>

Costs			
View	Summary		
	Utility	Customer	Total
2016	\$8,809	\$7,047	\$15,857
2017	\$9,123	\$7,298	\$16,421
2018	\$9,447	\$7,558	\$17,005
2019	\$9,783	\$7,826	\$17,609
2020	\$10,131	\$8,105	\$18,236
2021	\$10,526	\$8,421	\$18,946
2022	\$10,936	\$8,749	\$19,685
2023	\$11,362	\$9,090	\$20,452
2024	\$11,805	\$9,444	\$21,249
2025	\$12,265	\$9,812	\$22,078
2026	\$12,665	\$10,132	\$22,798
2027	\$13,078	\$10,463	\$23,541
2028	\$13,505	\$10,804	\$24,309
2029	\$13,945	\$11,156	\$25,101
2030	\$14,400	\$11,520	\$25,920

Targets					
View	Accounts				
	SF	MF	COM	INST	Total
2016	255	12	14	1	282
2017	264	12	15	1	292
2018	273	13	15	1	302
2019	283	13	16	1	313
2020	293	13	16	2	324
2021	304	14	17	2	337
2022	316	15	18	2	350
2023	328	15	18	2	364
2024	341	16	19	2	378
2025	354	16	20	2	392
2026	366	17	20	2	405
2027	378	17	21	2	419
2028	390	18	22	2	432
2029	403	19	23	2	446
2030	416	19	23	2	461

Water Savings (mgd)	
	Total Savings (mgd)
2016	0.005736
2017	0.011676
2018	0.017827
2019	0.024196
2020	0.030793
2021	0.037646
2022	0.044767
2023	0.052165
2024	0.059851
2025	0.067837
2026	0.070348
2027	0.072924
2028	0.075566
2029	0.078276
2030	0.081055

REFERENCES

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<http://www.allianceforwaterefficiency.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=4694>

<http://www.allianceforwaterefficiency.org/submetering.aspx>

CALFED Public School Retrofit Program for Riverside County. Online:

<http://www.usbr.gov/lc/socal/reports/PublicSchoolRetrofitRiversideCty.pdf>

Consortium for Efficient Energy. Online: <http://www.cee1.org/>

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[http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/California_IOU_Response_to_CEC_Invitation_to_Participate-](http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/California_IOU_Response_to_CEC_Invitation_to_Participate-Water_Meters_REFERENCE/DeOreo_2011_California_Single-Family_Water_Use_Efficiency_Study.pdf)

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Koeller & Company. California Urban Water Conservation Council Potential Best Management Practice report, *High Efficiency Plumbing Fixtures - Toilets and Urinals*, 2005.

Lake Powell Pipeline Study, Water Needs Assessment (WNA), Phase I Report, Final Draft, 2008.

Oak Ridge National Laboratory, Energy Division, *Bern Clothes Washer Study, Final Report*, prepared for U.S. Department of Energy, March 1998. Online: www.energystar.gov

United States Census Bureau 2010 census. Online: <http://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

Utah Board of Water Resources (UBWR). Lake Powell Pipeline, Modified Draft Study Report 10, *Socioeconomics and Water Resource Economics*, prepared for Utah Board of Water Resources, 2012.

Measure Number	Measure Description	Utility PV Cost	Community PV Cost	Water Savings (MGD)	Utility Cost (\$/afy)	Community Cost (\$/afy)	Program A	Program B	Program C
1	Financial Incentives for Irrigation Upgrades	\$4,623,072	\$7,424,308	0.389	\$ 10,602	\$ 17,025	x	x	x
2	Smart Irrigation Controller Rebates	\$1,866,884	\$3,302,949	0.408	\$ 4,083	\$ 7,224	x	x	x
3	Distribute Retrofit Kits	\$81,893	\$147,407	0.004	\$ 16,703	\$ 30,065	x	x	x
4	Toilet Leak Detection	\$30,137	\$161,165	0.002	\$ 11,984	\$ 64,089	x	x	x
5	High Efficiency Toilets (HET) Rebates	\$997,612	\$1,529,671	0.121	\$ 7,370	\$ 11,300	x	x	x
6	Single Family Water Surveys	\$2,204,091	\$2,439,194	0.174	\$ 11,300	\$ 12,505	x	x	x
7	Multifamily Washer Rebate	\$113,838	\$245,189	0.005	\$ 18,761	\$ 40,408	x	x	x
8	Public Information Program	\$3,232,667	\$3,232,667	0.264	\$ 10,945	\$ 10,945	x	x	x
9	Conservation Pricing	\$469,440	\$469,440	2.132	\$ 197	\$ 197	x	x	x
10	Rotating Sprinkler Nozzle Rebates	\$1,206,255	\$1,430,311	0.260	\$ 4,149	\$ 4,920	x	x	x
11	CII Rebates to Replace Inefficient Equipment	\$793,414	\$1,098,573	0.043	\$ 16,335	\$ 22,618	x	x	x
12	Replace Spray Nozzles	\$13,494	\$13,494	0.003	\$ 3,754	\$ 3,754	x	x	x
13	High Efficiency Urinal Rebate (<0.5 gallon)	\$401,084	\$721,951	0.004	\$ 88,280	\$ 158,904	x	x	x
14	Irrigation Water Surveys (Water Checks)	\$484,054	\$732,287	0.031	\$ 14,042	\$ 21,243	x	x	x
15	Xeriscape Demonstration Gardens	\$2,327,520	\$7,029,581	0.089	\$ 23,467	\$ 70,876	x	x	x
16	Train Landscape Maintenance Workers	\$164,014	\$794,838	0.025	\$ 5,763	\$ 27,928	x	x	x
17	Real Water Loss Reduction	\$7,084,477	\$7,084,477	2.133	\$ 2,965	\$ 2,965	x	x	x
18	Turf Removal	\$4,583,437	\$8,109,157	0.346	\$ 11,824	\$ 20,920	x	x	x
19	Washer Rebates for High Efficiency Machines	\$823,006	\$2,563,982	0.037	\$ 20,116	\$ 62,669	x	x	x
20	CII Surveys	\$610,318	\$1,098,573	0.127	\$ 4,300	\$ 7,739	x	x	x
21	School Building Retrofit	\$53,955	\$136,963	0.026	\$ 1,865	\$ 4,735	x	x	x
22	Billing Report Educational Tool	\$4,655,040	\$4,655,040	0.791	\$ 5,253	\$ 5,253	x	x	x
23	Multi-Family Submetering	\$44,629	\$116,034	0.013	\$ 2,996	\$ 7,790	x	x	x
24	Install High Efficiency Fixtures in Government Bldgs	\$79,549	\$217,895	0.020	\$ 3,616	\$ 9,903	x	x	x
25	Install or Rebate High Efficiency Faucets	\$305,159	\$549,287	0.025	\$ 10,790	\$ 19,422	x	x	x
26	Water Budgeting/ Monitoring	\$61,032	\$183,096	0.068	\$ 801	\$ 2,402	x	x	x
27	Require Efficient Toilets and Urinals	\$2,170,693	\$27,369,823	0.972	\$ 1,995	\$ 25,148	x	x	x
28	Efficient Outdoor Use Education and Training Program	\$406,775	\$732,195	0.102	\$ 3,572	\$ 6,430	x	x	x

	Utility PV Cost	Community PV Cost	Water Savings (MGD)	Water Savings (afy)	Community Cost (\$/afy)
Utility cost below \$13,800	Program A	\$38,589,697	5.973	6,690	\$ 5,768
Community cost below \$13,800	Program B	\$44,881,264	6.876	7,702	\$ 5,827
	Program C	\$83,589,546	8.073	9,042	\$ 9,244

DRAFT

Agenda Item Number :

Request For Council Action

Date Submitted 2015-10-23 08:35:23

Applicant Kent Perkins

Quick Title Silver Sneakers Contract

Subject Seeking approval for a contract with American Healthways Services, LLC to enroll the SHAC and the Recreation Center in the Silver Sneakers Fitness Program for mature adults.

Discussion Over 145 facilities in Utah alone are part of this nationwide program. Mature adults become part of the Silver Sneakers program and we allow them to use our facilities and programs. We do not charge them our regular fee, but Healthways pays the City \$2.50 per participant per visit up to \$20.00 per month.

Cost \$0.00

City Manager Recommendation

Action Taken

Requested by Kent Perkins

File Attachments [SilverSneakerAgmt-RecCtr.pdf](#)

Approved by Legal Department?

Approved in Budget? Amount:

Additional Comments Is it possible to get this on the agenda before Nov 5? Most facilities have generated a significant amount of revenue from this program and we hope to do the same. Healthways does the marketing, recruitment and promotion. We provide the facilities and programs as per normal. Once approved, the program can be implemented within about 30 days. There are no out of pocket expenses to the City.

Attachments [SilverSneakerAgmt-RecCtr.pdf](#)

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HEALTHWAYS MATURE MARKET AGREEMENT

This Healthways Agreement, its Program Schedule(s), exhibits and attachments, and any amendments thereto, (collectively the "Agreement") is entered into between **AMERICAN HEALTHWAYS SERVICES, LLC**, for itself (hereinafter referred to as "Healthways"), a Delaware limited liability company, and the undersigned Facility (as defined below) (Healthways and Facility are collectively referred to herein as the "Parties"). This Agreement replaces and supersedes any other Mature Market agreement between or among Facility and Healthways for the Healthways programs and products represented herein. Following the execution hereof, all such other agreements shall be terminated on the effective date of this Agreement.

PREAMBLE

WHEREAS, Healthways has entered into agreements with Sponsoring Organizations (as defined below) to provide fitness services, benefits, and programs to eligible Members (as defined below) within an established network of fitness centers;

WHEREAS, Facility offers health and fitness programming and services; and

WHEREAS, Healthways would like to include Facility, and Facility desires to be included, as a member of the network of facilities for one or more Healthways products to provide subsidized basic fitness memberships and services, all on the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the mutual premises set forth above and the promises hereinafter appearing, and for other good and valuable consideration, the receipt, sufficiency and adequacy of which is hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. **Definitions.** The terms defined in this section shall have the meanings specified for all purposes of this Agreement.
 - a) "**Confidential Information**" means all provisions of this Agreement and any business expertise, manuals, videos, trade secrets, compensation, Sponsoring Organization Member information and any and all Healthways intellectual property.
 - b) "**Facility**" means the undersigned Facility whose name and other identifying information appear herein and any additional participating locations of Facility as mutually agreed to and set forth in Exhibit A, which have entered into this Agreement with Healthways to be part of its Healthways Network, on the terms and conditions set forth herein.
 - c) "**Healthways Network**" means, collectively, all participating locations that have entered into a contract agreement with Healthways to provide the Program.
 - d) "**Member**" means a Sponsoring Organization member, employee, dependent or other person eligible for the Program as determined by the Sponsoring Organization's criteria.
 - e) "**Program**" means each of the Healthways programs described in the Program Schedules.
 - f) "**Program Schedule**" means each, and "Program Schedule(s)" shall mean all, of the program schedules attached to this Agreement, and incorporated herein by reference, that describe the Healthways programs provided by Facility to Members of Sponsoring Organizations. Healthways and Facility acknowledge and agree that notwithstanding any other provision of this Agreement, Healthways may amend this Agreement upon sixty (60) days prior written notice to Facility to modify existing Program Schedule(s) or to add one or more new Program Schedule(s), and that Facility may decline participation in a new Program Schedule(s) or decline proposed modifications to an existing Program Schedule(s) upon written notice to Healthways within such sixty (60) day period.
 - g) "**Reference Guide**" means the procedures and guidelines established by Healthways for participation in the Healthways Network by Facility and under which the Program is administered. The Reference Guide, which shall be provided to

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Facility prior to the commencement of this Agreement, is incorporated herein by reference; the Reference Guide may be periodically updated by Healthways and updated copies shall be provided to Facility from time to time.

- h) “Sponsoring Organization” means any organization, employer group, health plan or subset thereof that is contracted with Healthways to provide the Program to its members and whose members may therefore utilize Facility in accordance with the terms of this Agreement. Facility shall provide the Program to eligible Members of all Sponsoring Organizations. Sponsoring Organization information shall be available to Facility, and such Sponsoring Organization information shall be incorporated herein by reference.
- i) “Term” means the Initial Term of the Agreement and each successive one (1) year period as provided in the Term section of this Agreement.

2. Duties and Obligations of Facility.

- a) Acceptance to and Participation in the Healthways Network. Healthways' execution of this Agreement shall serve as notice of Facility's acceptance into the Healthways Network. In order to become and remain a participant in the Healthways Network, Facility shall throughout the Term of this Agreement comply with the Reference Guide (including any updates thereto), including all quality assurance standards, operations, protocols, policies, procedures, follow-up guidelines, and health and safety standards of Healthways.
- b) Member Program Rights. Facility shall not impose any charges on Members for Program services covered under this Agreement. At no charge to the Member, each Member shall establish and maintain a basic fitness membership with unrestricted hours at Facility, provided that such individual remains an eligible Member and this Agreement remains in effect. The Program excludes programs and services offered by Facility which carry additional charges beyond basic fitness membership services, such as racquetball, tennis, massage and similar fee-based activities. If a Member requests services after being informed that the services are not covered under the Program, Healthways is not responsible for payment to Facility.
- c) Joint Marketing and Public Relations. During the Term of this Agreement, Facility agrees to allow Healthways and Sponsoring Organization to use the name, address, phone, amenities and web site information provided in Exhibit A in marketing and advertising materials and campaigns. All marketing and advertising materials, and materials intended for distribution to Members prepared by Facility that refer to the Program, Healthways, or Sponsoring Organization shall be approved by Healthways in writing prior to their distribution. Facility agrees to make best efforts to coordinate all media communications through the Healthways Public Relations Department, and immediately inform Healthways of all media inquiries regarding the Program, Healthways, or Sponsoring Organization.
- d) Limited Facility Use of Healthways Trademarks, Logos, and Copyrighted Materials. Facility agrees that for the Term of this Agreement, all external marketing and advertising of all Healthways trademarked and service marked names, logos, identities, formats, and materials (the “Marks and Materials”), including the Program name, will first be approved in writing by Healthways, and that at the conclusion of this Agreement, Facility shall cease all advertising, marketing, and references to the same. Nothing in this Agreement grants or shall be deemed to grant to either Party any right, title or interest in or to the other Party's Marks and Materials. All use by Facility of Healthways' Marks (including any goodwill associated therewith) shall inure to the benefit of Healthways.
- e) Dispute Resolution. Facility agrees that in the event any disagreement arises between Facility, Healthways and/or Sponsoring Organization on any matter whatsoever, Healthways, Facility, and/or Sponsoring Organization or any subset thereof shall work with the other party(ies) to reach a resolution of the disagreement, and no one shall involve Members in any matter concerning such a disagreement. Facility shall not contact a member for any reason related to a dispute between Healthways, Facility and/or Sponsoring Organization.
- f) Research Studies. Facility shall obtain prior written approval from Healthways for any research or clinical studies of Members or the Program. Facility shall provide study findings and results to Healthways prior to any publication or presentation of such findings or results.

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- g) Membership Conversion. Facility agrees that Members eligible for a fully subsidized Program who are currently members of Facility will be able to inactivate or “freeze” their memberships for the duration of this Agreement and pay no monthly dues, cancellation fee, or other fees during the inactivation period so that they may attend Facility at no charge under the Program. At the time this Agreement terminates, or if applicable Members terminate their membership in Sponsoring Organization, those Members will then be responsible for the remaining terms of their individual memberships with Facility. Facility shall not refuse or dissuade eligible Members from participating in the Program.
 - h) Healthways Network Reciprocity. For the Term of this Agreement, all Members utilizing the Program will be allowed, after completing Program enrollment, to visit any and all Healthways Network participating locations offering the Healthways Program for which they are eligible. Reciprocity rights under this Agreement shall not include locations of Facility or other affiliated facilities not specifically set forth in Exhibit A.
 - i) Healthways Fitness Provider Portal. All Facility participating locations shall create and maintain user accounts on the web-based Healthways Fitness Provider Portal. Facility shall utilize the Healthways Fitness Provider Portal to verify Member eligibility and to obtain and access Healthways materials, including Sponsoring Organization information, training materials, Program forms, Program reports, and the Reference Guide.
3. Compensation. As payment for Program services, Healthways shall pay Facility according to the terms set forth in each applicable Program Schedule attached hereto for services provided on or after the Program Ready Date. Compensation paid by Healthways is inclusive of any and all taxes which Facility may be required to pay to any governmental authority. Healthways will make payment to Facility via electronic funds transfer.
4. Term.
- a) Initial Term and Ready Date. This Agreement will commence upon execution by the Parties, and shall continue in full force and effect until March 31, 2017 (“Initial Term”), subject to cancellation as provided in the Cancellation/Termination section below. Services to Members and payment for such services shall commence on a date following the commencement of this Agreement that shall be communicated to Facility by Healthways (“Ready Date”). The Initial Term and any and all Renewal Terms are referred to herein as the “Term”.
 - b) Renewal of Agreement. This Agreement shall be automatically renewed for successive one year terms after the Initial Term (the “Renewal Term”) unless either party gives written notice of termination at least one hundred twenty (120) days prior to the expiration of the Initial Term or the current Renewal Term of the Agreement or unless the Agreement is canceled pursuant to the Cancellation/Termination section below.
5. Cancellation/Termination.
- a) Change in Terms; Poor Usage. Healthways retains, upon thirty (30) days’ written notice, the right to terminate this Agreement or the participation by Facility under any Program Schedule for any location of Facility in Exhibit A on the basis of, in Healthways sole and reasonable discretion, poor usage of Facility by Members or upon termination or change in terms of a Sponsoring Organization’s contract with Healthways. In the event Healthways removes Facility from the Healthways Network, Facility shall be compensated per this Agreement for services rendered up to and including the date of cancellation.
 - b) Bankruptcy. Notwithstanding any provision in this Agreement, if at any time there shall be filed by or against a party to this Agreement, in any court, tribunal, administrative agency, or any other forum having jurisdiction, pursuant to any applicable law, either of the United States or of any state, a petition in bankruptcy or insolvency or for reorganization or for the appointment of a receiver, trustee, or conservator of all or a portion of the party’s property, or if a party makes an assignment for the benefit of creditors, and if this action is not dismissed after ninety (90) calendar days, this Agreement may be immediately canceled and terminated by the other party.
 - c) Material Breach. If either party breaches any material term or condition of this Agreement, this Agreement may be terminated after written notice of such breach or default by the non-breaching party to the breaching party. The notice must specify the nature of said material breach and provide the breaching party thirty (30) days from receipt of the

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- notice to correct the material breach. In the event the breaching party fails to cure the material breach within the thirty (30) day period, this Agreement shall automatically terminate upon completion of the thirty (30) day period, notwithstanding any other provision in this Agreement.
- d) Early Termination. Notwithstanding any other provision of this Agreement, Healthways may terminate this Agreement at any time upon notice to Facility due to 1) failure of Facility to maintain required insurance coverage as set forth in this Agreement; 2) closure of Facility, resulting in denial of Program services to Members, without at least thirty (30) days' prior written notice to Healthways; 3) fraudulent Program utilization reporting by Facility; or 4) Healthways' reasonable determination that the health or safety of Members may be in jeopardy if this Agreement is not terminated.
 - e) Default. In the event that Facility defaults under this Agreement or the Agreement is terminated pursuant to the Material Breach section or the Early Termination section above, Healthways may, at its sole discretion and without limiting other remedies available to Healthways at law or in equity, withhold payment of any amounts otherwise due and payable to Facility under this Agreement.
 - f) Termination for Convenience. Upon forty-five (45) days prior written notice, Healthways may terminate this Agreement for convenience without any further obligation or liability to Facility apart from liability for fees payable to Facility under this Agreement up to the effective date of termination.
6. Confidentiality. All Confidential Information between Healthways and Facility are shared in strictest confidence. During the Term and at all times thereafter, Facility shall not divulge, furnish or make accessible to anyone or use in any way (other than use in the ordinary course of providing services under this Agreement) any Confidential Information, **except where any such Confidential Information is subject to disclosure by Facility pursuant to State Law**. Facility shall return to Healthways all of Healthways' materials (including any and all copies of such materials) used in the provision of the Program, including the Reference Guide and Member files, upon completion of this Agreement or in the event of its termination, or at any other time upon request from Healthways.
7. Member Contact. Facility agrees to not directly contact Members during the Term of this Agreement in regard to business related matters pertaining to the Program, such as, but not limited to, switching health care plans, disenrolling, enrolling with other health care plans or similar entities, or contracting directly with Facility instead of Healthways and Sponsoring Organization.
8. Insurance. Facility shall obtain and maintain in force Acceptable general liability insurance coverage in an amount of at least \$1,000,000 per occurrence. In the event that coverage is self-insured or maintained by a risk management pool, insurance trust, assurance pool or risk retention group, coverage is subject to prior approval by Healthways. Facility shall cause such insurance to require that the carrier will list Healthways as certificate holder and shall notify Healthways of expiration, termination, or cancellation at least thirty (30) days prior to any expiration, termination, or cancellation of such policy. Facility shall provide a current certificate of insurance with this Agreement and within ten (10) days of request by Healthways thereafter. **PLEASE ATTACH A COPY OF FACILITY LIABILITY POLICY FACE SHEET.**
- Facility shall cause American Healthways Services, LLC, to be named as an additional insured on its general liability insurance policy "for all services provided under the contract agreement between Healthways and the insured." Any exception to the additional insured provision must have prior approval by Healthways. Facility shall provide such certificate of insurance to Healthways no later than thirty (30) days after Program Ready Date and within ten (10) days of request by Healthways thereafter.
9. Notices. Unless expressly provided otherwise, all notices, requests, demands and other communications required or permitted under this Agreement shall be in writing and shall be deemed to have been duly given, made and received when sent by 1) Electronic Mail; or 2) hand delivery, including by a recognized courier service; or 3) registered or certified mail, postage prepaid, return receipt requested. Notices under the Agreement to Facility shall be to the Contract Administrator in Exhibit A-2. Notices under the Agreement to Healthways shall be to: Healthways Provider Networks Department, 1445 South Spectrum Blvd., Suite 100, Chandler, Arizona 85286.

Facility shall provide a minimum of ten (10) days notice to Healthways in the event of a change in any of the information provided in Exhibit A of this Agreement. Either party may alter the address to which communications or copies are to be sent by giving notice of such change of address in conformity with the provisions of this section for the giving of notice.

10. Miscellaneous.

- a) Compliance with Federal and State Rules and Regulations. For the Term of this Agreement, Facility shall comply with all applicable federal and state rules and regulations regarding services provided to Members.
- b) Business License and Regulatory Standards. Facility shall hold an active and unrestricted business license as required by law, covering all aspects of services offered, and meet occupational health and safety requirements and regulatory standards in the state and jurisdiction in which Facility operates.
- c) Priority of Documents. Any conflict, ambiguity or inconsistency between the terms and conditions in this Agreement, the Program Schedule(s), the Exhibits and any document referred to in or incorporated into this Agreement shall be resolved in accordance with the following decreasing order of priority: i. this Agreement; ii. The Program Schedule(s); iii. the Exhibits; and iv. such other referenced or incorporated documents.
- d) Severability. Should any provision herein be determined by any court of competent jurisdiction to be illegal, invalid or unenforceable in any respect, in whole or in part, the offending provisions shall not affect the enforceability of the remaining provisions of this Agreement.
- e) Amendment of Agreement to Comply with Law. **Both Parties** acknowledge and agree that **either Party** may amend this Agreement in order to comply with applicable law, by sixty (60) days' prior written notice **to the other Party**, and that **the other Party** may elect to withdraw its acceptance with regard to such amendment within such sixty (60) day period if such amendment would have a material adverse effect on **the other Party**.
- f) Applicable Law. The validity of this Agreement and of any of its terms and provisions, as well as the rights and duties of the Parties hereunder, shall be interpreted and enforced pursuant to and in accordance with the laws of the State of Tennessee.
- g) Counterparts. This Agreement may be executed in any number of counterparts and by different Parties hereto in separate counterparts, with the same effect as if all Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together and shall constitute one and the same instrument.
- h) Entire Agreement. This Agreement, together with any Exhibits and Schedule(s) hereto, represents the entire understanding and agreement among the Parties with respect to the subject matter hereof and shall supersede any prior writings, understandings, or agreements among the Parties with respect to the subject matter hereof.
- i) Modification. Unless specifically set forth in this Agreement, no alteration, amendment, waiver, cancellation or any other change in any term or condition of this Agreement shall be valid or binding on either Party unless the same shall have been mutually agreed to in writing by both Parties.
- j) Sale of Business/Transfer of Assets. If Facility desires to sell or transfer all or substantially all of its assets or business to another entity, or transfers to a third party a controlling interest in its assets or business, Facility shall so advise Healthways in writing at least ninety (90) days' prior to the sale or transfer date. Upon notification of sale, Healthways may, in its sole discretion, choose to terminate the Agreement effective on date of sale or extend the terms of the Agreement to the new entity.
- k) Authority to Sign. The individual signing below on behalf of Facility represents and warrants that he/she has all requisite corporate power and authority to enter into this Agreement on behalf of Facility.

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IN WITNESS WHEREOF, the Parties have agreed as set forth above.

AMERICAN HEALTHWAYS SERVICES, LLC

Sand Hollow Aquatic Center

Name of Facility

Signature

Signature

Joy Powell

Jonathan T. Pike

Printed Name

Senior Solutions Division President

Mayor, City of St. George

Title

Date

Date

PROGRAM SCHEDULE

Program Name: Mature Market Fully Subsidized Program

Program Brands: SilverSneakers® Fitness program, SilverSneakers Private Brand, Healthways ACCESS, and other brand names for the Mature Market Fully Subsidized Program communicated to Facility by Healthways from time to time

Member Type: Medicare, Group Retirees and Older Adults

Program Description: The Program is offered to Members of the Sponsoring Organization. The Program includes SilverSneakers exercise classes and basic fitness membership services, which may include other Healthways services, for Members provided through a network of facilities; also included in the Program are all facets presented in the Duties and Obligations of Facility section of the Agreement.

1. Program Duties and Obligations of Facility. In exchange for the compensation to be paid by Healthways, Facility shall perform the following services:
 - a) Program Implementation Process. To prepare for Program commencement, Facility agrees to participate in the following 1) coordination with Healthways of electronic reporting containing the required data elements; 2) Healthways-scheduled and led training; and 3) Healthways' evaluation of Facility prior to the Program Ready Date to certify Facility's preparedness to provide Program.
 - b) Staffed Hours. Facility shall be appropriately staffed in accordance with professionally-recognized standards of fitness programs a minimum of six (6) hours per day, Monday through Friday.
 - c) Program Enrollment. Facility shall enroll Members in the Program in accordance with the protocol defined in the Reference Guide or other protocol mutually agreed between the Parties.
 - d) Reporting Obligations of Facility. Facility shall report Program utilization to Healthways on a monthly basis. Program utilization reporting shall consist of all 1) Program forms completed during the previous month as applicable; and 2) visits for the month. Facility shall prepare a report of daily visits and utilization from the month summarizing activity and containing the required data elements and submit it electronically to Healthways no later than the fifth (5th) day of the following month. The required file format, data elements and submission options are defined in the Reference Guide. The Parties to this Agreement shall work cooperatively to establish correct and acceptable electronic monthly utilization data reporting; Healthways may provide technical support to Facility if necessary.
 - e) Facility Staff Training. Facility staff who have regular contact with Members are required to participate in Healthways training prior to commencement of the Program and as needed thereafter to account for staff turnover and to ensure proper service for Members.
 - f) SilverSneakers Program Advisor. Facility shall designate one staff member as the SilverSneakers Program Advisor, who shall serve as a liaison to Healthways and as a resource person for SilverSneakers Members utilizing the Healthways Network, and is knowledgeable concerning all services provided by Facility to Members.
 - g) Guest Pass Program. Facility shall provide Program services to persons presenting a Healthways guest pass. Properly documented guest visits will be counted the same as a Member visit for purposes of calculating Facility's compensation.
2. Medicare Compliance for Program(s) Provided to Medicare Recipients. In recognition that Sponsoring Organization and its subcontractors may be obligated to comply with all applicable federal governmental regulations regarding services to Medicare members, including the rules and regulations of the Centers for

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Medicare and Medicaid Services (CMS), Healthways and Facility mutually agree to comply with the following for services provided to Medicare members.

- a) Compliance with Federal and State Laws. Facility acknowledges that payments made to Facility under this Agreement may be made from federal funds. Therefore, in connection with all services rendered under the Agreement, Facility agrees to comply with the requirements of the contracts between Healthways' customers and CMS (the "CMS Contracts"), and all applicable federal and state laws and regulations and CMS guidance and instructions, including, but not limited to all Medicare laws, such as the Medicare Modernization Act and the regulations contained in 42 CFR Parts 422 and 423; all applicable state and federal privacy and security requirements, including but not limited to the confidentiality, privacy and security provisions for Medicare health plans contained in the regulations found at 42 CFR 422.118 and 42 CFR 423.136; and all applicable laws, regulations and guidance designed to prevent fraud, waste or abuse of federal funds, including the False Claims Act (31 U.S.C. 3729 et seq.), the Anti-kickback statute (Social Security Act § 1128B(b)), and HIPAA administrative simplification rules (45 CFR Parts 160, 162, and 164).
- b) Right to Inspect. Facility acknowledges and agrees that the Department of Health and Human Services (HHS), the Comptroller General, or their designees, or any applicable state or federal governmental entity, or Sponsoring Organization, shall have the right to inspect, evaluate, and audit any pertinent contracts, books, documents, papers, and records involving transactions related to services provided under this Agreement to Medicare Members. Facility shall maintain accurate records of compliance with this Agreement ("Records") in accordance with recognized accounting and document retention practices and in a format that shall permit audit. Such Records shall be maintained by Facility for a period of ten (10) years following expiration or termination of this Agreement. This right to inspect shall extend for a period of ten (10) years from the termination date of the CMS Contracts (or applicable CMS Contract), or the date of completion of any audit in connection with the Medicare health plans, whichever is later. Facility will make its books and other records available in accordance with 42 CFR 422.504(i)(2) and 42 CFR 423.505(i)(2) and any other applicable laws and regulations. In the event Facility is unable to retain such records for ten (10) years, Facility shall provide the records to Healthways at the conclusion of this Agreement and Healthways will retain the records on behalf of Facility.
- c) External Review. Facility agrees to cooperate with all independent quality review and improvement organization activities required by CMS and/or Sponsoring Organization pertaining to the provision of services to Sponsoring Organization Members.
- d) Privacy/Confidentiality. Facility agrees to safeguard the privacy of any information that identifies a particular Sponsoring Organization Member in accordance with federal and state laws and Sponsoring Organization policy and to maintain Sponsoring Organization Members' records in an accurate and timely manner.
- e) Non-Discrimination. Facility agrees to not discriminate against any person because of race, sex, age, marital status, national origin, religion, color, citizenship, disability, health status, health insurance coverage or veteran status. As applicable, Facility agrees to comply with 1) Title VI of the Civil Rights Act of 1964 as implemented by regulations at 45 CFR Part 84; 2) The Age Discrimination Act of 1975 as implemented by regulations at 45 CFR Part 91; 3) The Americans With Disabilities Act; 4) The Rehabilitation Act of 1973; 5) Other laws applicable to recipients of federal funds; and 6) All other applicable laws and rules. This Agreement incorporates by reference and is subject to the following regulations of the Office of Federal Contract Compliance Programs, Department of Labor: 41 C.F.R. §60-1.4, Equal Opportunity Clause; 41 C.F.R. §60-250.5, Equal Opportunity Clause and Affirmative Action Clause for Special Disabled Veterans and Veterans of the Vietnam Era; 41 C.F.R §60-741.5, Equal Opportunity Clause and Affirmative Action Clause for Handicapped and Disabled Persons. Facility agrees not to discriminate against any Medicare Member on the basis of any factor that is related to health status, including, but not limited to the following: (1) medical condition, including mental as well as physical illness; (2) claims experience; (3) receipt of health care; (4) medical history; (5) genetic information; (6) evidence of insurability, including conditions arising out of acts of domestic violence; and (7) disability.
- f) Exclusion of Certain Persons. Facility certifies that neither it nor any of its principals (officers, directors, owners, partners, key employees, principal investigators, researchers or management or supervisory personnel) (Principals) is presently debarred, suspended, proposed for debarment, declared ineligible or

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excluded from participation in any federal grant, benefit, contract or program (including, but not limited to, Medicare and Medicaid) by any Federal department or agency. Facility agrees to provide immediate written notice to Healthways if it learns at any time that the certification herein was erroneous when submitted or if, during the Term of this Agreement, it, or any of its Principals, is debarred, suspended, proposed for debarment, declared ineligible or excluded from participation in any federal grant, benefit, contract or program. If subcontracting is permitted by the Agreement, Facility agrees that its subcontractors will comply with the foregoing covenant. Facility agrees that debarment, suspension, proposed debarment or suspension, ineligibility or exclusion of either party, or any of its principals or subcontractors, shall constitute cause for immediate termination of this Agreement. Facility further agrees to comply with all Federal anti-terrorism rules and regulations. Each party's signature below shall serve as certification that, to the best of the party's knowledge, the party 1) is not; 2) has not been designated as; 3) is not owned, affiliated, or controlled by; and 4) does not support, assist or aid a suspected terrorist organization or individual as defined by Federal law including, but not limited to, Executive Order 13224.

- g) Hold Harmless. With the exception of charges for services not covered under this Agreement, Facility shall in no event bill, charge, collect a deposit from, or hold liable for any debts of Healthways or Facility, Members or any applicable government agency. In the event a Member provides payment to Facility for services provided pursuant to this Agreement, Healthways retains the right to deduct an equivalent amount from the compensation payable to Facility for the purpose of Member reimbursement. All obligations under this section shall survive the termination of this Agreement, regardless of the cause giving rise to such termination, including, without limitation, insolvency of either party or breach of this Agreement.
- h) Waiver of Claims and Indemnity. Unless caused by the gross negligence or intentional wrongdoing of Healthways, Sponsoring Organization, or any applicable government agency, Facility hereby waives and releases all claims against Healthways, Sponsoring Organization, and applicable government agency, and/or any of their respective officers, directors, shareholders, employees, or representatives, in respect of a Member participating in the Healthways Network, and Healthways, Sponsoring Organization, and government agency shall not be liable for injury to person or damage to property sustained by Sponsoring Organization's Members as a result of participation in any activities which may be undertaken in or sponsored by Facility, including, but not limited, to any accident, or from any occurrence, or act, or from negligence or omission on the part of Facility or any employee or agent thereof. Facility shall indemnify, defend, and hold harmless Healthways, Sponsoring Organization, Members, and applicable government agency and their respective officers, directors, shareholders, employees, and representatives, on a current basis, from any and all claims, demands, suits, liabilities, damages, obligations, and expenses (including without limitation reasonable attorneys' fees) arising out of or in any way related to any negligent act or other wrongful conduct by Facility under this Agreement, except to the extent caused by the gross negligence or intentional wrongdoing of Healthways, Sponsoring Organization, or applicable government agency.

Healthways and Facility agree that to the extent permitted by law, the Parties shall cooperate with one another in the defense of any claim arising from alleged tortious acts of their respective officers, shareholders, employees, or agents and to give one another written notice of any claims covered by this paragraph. All obligations under this section shall survive the termination of this Agreement, regardless of the cause giving rise to such termination, including, without limitation, insolvency of either party or breach of this Agreement.

- i) Professionally-Recognized Standards. Healthways and Facility shall provide the Program to Sponsoring Organization Members in a manner consistent with quality assurance standards, the Reference Guide, and professionally-recognized standards of fitness and wellness programs.
3. Compensation.
- a) Program Utilization Payment. Healthways shall compensate Facility \$2.50 per Program Visit, up to a maximum of \$20.00 per Program Participant per month. Program Visit shall mean one distinct occasion, recorded and reported by Facility in accordance with procedures specified in the Reference Guide, during which a Member enters Facility to enroll in or use the Program. Healthways shall not compensate Facility for more than one Program Visit per day. Program Participant shall mean a Member, who, after completing

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the Program enrollment, has used the Program at a facility in the Healthways Network at least once in a given month.

- b) Payment Schedule. Payment shall be processed for direct deposit by Healthways by the last day of the month following the month in which Program Visits occurred (“following month”), provided Healthways receives Facility’s monthly utilization data by the fifth (5th) day of the following month. In the event utilization data is not received in a timely manner, payment may be delayed. Payment for monthly utilization received after the last day of the following month will be denied for non-timely filing and will not be eligible for reimbursement or appeal. Appeals must be brought to the attention of Healthways within thirty (30) days of receipt of payment; appeals brought at a later date will not be eligible for review.

EXHIBIT A-1
FACILITY INFORMATION

The information in the box below is intended for marketing purposes. Please confirm that it is accurate.

Facility Name:	Sand Hollow Aquatic Center
Physical Address:	1144 Lava Flow Drive St. George, UT 84770
Phone Number:	435-627-4585
Web Site Address:	http://www.sgcity.org/departments/recreation/swimming.php

**To enable marketing of amenities and services are marketed, please designate your basic amenities below and all amenities upon initial log in to the Fitness Provider Portal.*

Amenity/Program	<input checked="" type="checkbox"/> Offered as part of basic membership at no additional cost to Members
Cardiovascular Equipment	X
Group Exercise/Aerobics Area	X
Hot Tub/Whirlpool	
Resistance Training Equipment	X
Steam and/or Sauna	
Swimming Pool – Seasonal (not available throughout the year)	
Swimming Pool – Year-Round	X

Fax: (435) 634-5983 Direct Fax Need to call first

General Email: recreation@sgcity.org

Who will be our primary location contact (Healthways Program Advisor)? This individual will be responsible for scheduling training, coordinating with our Provider Services Liaison, and will need access to member records.

Contact Person: Kelly Humphreys

Contact Title: Aquatics Manager

Contact Phone: (435) 627-4585

Contact Fax: (435) 634-5983

Contact Email: kelly.humphreys@sgcity.org

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EXHIBIT A-2

CONTRACT ADMINISTRATOR

Name: Melea Adams

Title: Leisure Services Financial Associate

Mailing Address: 220 N. 200 E., St. George, UT 84770

Phone: (435) 627-4566

Fax: (435) 627-4569

Email: melea.adams@sgcity.org

The Contract Administrator shall receive legal correspondence regarding the Agreement, shall have access to payment information for all Facilities in Exhibit A-1 to this Agreement, and shall be responsible for setting up Healthways Fitness Provider Portal accounts for Facility staff.

Who should Healthways contact to coordinate the technical aspects of monthly utilization data reporting? This individual will need to have specific information about your location's reporting capabilities, and be responsible for obtaining management approval for establishing a reporting method.

Name: Melea Adams

Phone: 435-627-4566

Email: melea.adams@sgcity.org

Request for Taxpayer Identification Number and Certification

**Give Form to the
 requester. Do not
 send to the IRS.**

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
City of St. George

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
 Individual/sole proprietor or single-member LLC
 Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
 Other (see instructions) ▶ Government

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
 Exempt payee code (if any) _____
 Exemption from FATCA reporting code (if any) _____
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)
175 East 200 North

6 City, state, and ZIP code
St. George UT 84776

7 List account number(s) here (optional)

Print or type
See Specific instructions on page 2.

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number

			-			-			
--	--	--	---	--	--	---	--	--	--

or

Employer identification number

8	7	-	6	0	0	0	2	7	5
---	---	---	---	---	---	---	---	---	---

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Part II Certification

Under penalties of perjury, I certify that:

- The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
- I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
- I am a U.S. citizen or other U.S. person (defined below); and
- The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 3.

Sign Here Signature of U.S. person ▶ Mick Gahr Date ▶ 10-20-15

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at www.irs.gov/fw9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)

- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
 - Form 1099-C (canceled debt)
 - Form 1099-A (acquisition or abandonment of secured property)
- Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding? on page 2.

By signing the filled-out form, you:

- Certify that the TIN you are giving is correct (or you are waiting for a number to be issued).
- Certify that you are not subject to backup withholding, or
- Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
- Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

HEALTHWAYS MATURE MARKET AGREEMENT

This Healthways Agreement, its Program Schedule(s), exhibits and attachments, and any amendments thereto, (collectively the "Agreement") is entered into between AMERICAN HEALTHWAYS SERVICES, LLC, for itself (hereinafter referred to as "Healthways"), a Delaware limited liability company, and the undersigned Facility (as defined below) (Healthways and Facility are collectively referred to herein as the "Parties"). This Agreement replaces and supersedes any other Mature Market agreement between or among Facility and Healthways for the Healthways programs and products represented herein. Following the execution hereof, all such other agreements shall be terminated on the effective date of this Agreement.

PREAMBLE

WHEREAS, Healthways has entered into agreements with Sponsoring Organizations (as defined below) to provide fitness services, benefits, and programs to eligible Members (as defined below) within an established network of fitness centers;

WHEREAS, Facility offers health and fitness programming and services; and

WHEREAS, Healthways would like to include Facility, and Facility desires to be included, as a member of the network of facilities for one or more Healthways products to provide subsidized basic fitness memberships and services, all on the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the mutual premises set forth above and the promises hereinafter appearing, and for other good and valuable consideration, the receipt, sufficiency and adequacy of which is hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. **Definitions.** The terms defined in this section shall have the meanings specified for all purposes of this Agreement.
 - a) "**Confidential Information**" means all provisions of this Agreement and any business expertise, manuals, videos, trade secrets, compensation, Sponsoring Organization Member information and any and all Healthways intellectual property.
 - b) "**Facility**" means the undersigned Facility whose name and other identifying information appear herein and any additional participating locations of Facility as mutually agreed to and set forth in Exhibit A, which have entered into this Agreement with Healthways to be part of its Healthways Network, on the terms and conditions set forth herein.
 - c) "**Healthways Network**" means, collectively, all participating locations that have entered into a contract agreement with Healthways to provide the Program.
 - d) "**Member**" means a Sponsoring Organization member, employee, dependent or other person eligible for the Program as determined by the Sponsoring Organization's criteria.
 - e) "**Program**" means each of the Healthways programs described in the Program Schedules.
 - f) "**Program Schedule**" means each, and "Program Schedule(s)" shall mean all, of the program schedules attached to this Agreement, and incorporated herein by reference, that describe the Healthways programs provided by Facility to Members of Sponsoring Organizations. Healthways and Facility acknowledge and agree that notwithstanding any other provision of this Agreement, Healthways may amend this Agreement upon sixty (60) days prior written notice to Facility to modify existing Program Schedule(s) or to add one or more new Program Schedule(s), and that Facility may decline participation in a new Program Schedule(s) or decline proposed modifications to an existing Program Schedule(s) upon written notice to Healthways within such sixty (60) day period.
 - g) "**Reference Guide**" means the procedures and guidelines established by Healthways for participation in the Healthways Network by Facility and under which the Program is administered. The Reference Guide, which shall be provided to

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Facility prior to the commencement of this Agreement, is incorporated herein by reference; the Reference Guide may be periodically updated by Healthways and updated copies shall be provided to Facility from time to time.

- h) “Sponsoring Organization” means any organization, employer group, health plan or subset thereof that is contracted with Healthways to provide the Program to its members and whose members may therefore utilize Facility in accordance with the terms of this Agreement. Facility shall provide the Program to eligible Members of all Sponsoring Organizations. Sponsoring Organization information shall be available to Facility, and such Sponsoring Organization information shall be incorporated herein by reference.
- i) “Term” means the Initial Term of the Agreement and each successive one (1) year period as provided in the Term section of this Agreement.

2. Duties and Obligations of Facility.

- a) Acceptance to and Participation in the Healthways Network. Healthways’ execution of this Agreement shall serve as notice of Facility’s acceptance into the Healthways Network. In order to become and remain a participant in the Healthways Network, Facility shall throughout the Term of this Agreement comply with the Reference Guide (including any updates thereto), including all quality assurance standards, operations, protocols, policies, procedures, follow-up guidelines, and health and safety standards of Healthways.
- b) Member Program Rights. Facility shall not impose any charges on Members for Program services covered under this Agreement. At no charge to the Member, each Member shall establish and maintain a basic fitness membership with unrestricted hours at Facility, provided that such individual remains an eligible Member and this Agreement remains in effect. The Program excludes programs and services offered by Facility which carry additional charges beyond basic fitness membership services, such as racquetball, tennis, massage and similar fee-based activities. If a Member requests services after being informed that the services are not covered under the Program, Healthways is not responsible for payment to Facility.
- c) Joint Marketing and Public Relations. During the Term of this Agreement, Facility agrees to allow Healthways and Sponsoring Organization to use the name, address, phone, amenities and web site information provided in Exhibit A in marketing and advertising materials and campaigns. All marketing and advertising materials, and materials intended for distribution to Members prepared by Facility that refer to the Program, Healthways, or Sponsoring Organization shall be approved by Healthways in writing prior to their distribution. Facility agrees to make best efforts to coordinate all media communications through the Healthways Public Relations Department, and immediately inform Healthways of all media inquiries regarding the Program, Healthways, or Sponsoring Organization.
- d) Limited Facility Use of Healthways Trademarks, Logos, and Copyrighted Materials. Facility agrees that for the Term of this Agreement, all external marketing and advertising of all Healthways trademarked and service marked names, logos, identities, formats, and materials (the “Marks and Materials”), including the Program name, will first be approved in writing by Healthways, and that at the conclusion of this Agreement, Facility shall cease all advertising, marketing, and references to the same. Nothing in this Agreement grants or shall be deemed to grant to either Party any right, title or interest in or to the other Party’s Marks and Materials. All use by Facility of Healthways’ Marks (including any goodwill associated therewith) shall inure to the benefit of Healthways.
- e) Dispute Resolution. Facility agrees that in the event any disagreement arises between Facility, Healthways and/or Sponsoring Organization on any matter whatsoever, Healthways, Facility, and/or Sponsoring Organization or any subset thereof shall work with the other party(ies) to reach a resolution of the disagreement, and no one shall involve Members in any matter concerning such a disagreement. Facility shall not contact a member for any reason related to a dispute between Healthways, Facility and/or Sponsoring Organization.
- f) Research Studies. Facility shall obtain prior written approval from Healthways for any research or clinical studies of Members or the Program. Facility shall provide study findings and results to Healthways prior to any publication or presentation of such findings or results.

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- g) Membership Conversion. Facility agrees that Members eligible for a fully subsidized Program who are currently members of Facility will be able to inactivate or “freeze” their memberships for the duration of this Agreement and pay no monthly dues, cancellation fee, or other fees during the inactivation period so that they may attend Facility at no charge under the Program. At the time this Agreement terminates, or if applicable Members terminate their membership in Sponsoring Organization, those Members will then be responsible for the remaining terms of their individual memberships with Facility. Facility shall not refuse or dissuade eligible Members from participating in the Program.
 - h) Healthways Network Reciprocity. For the Term of this Agreement, all Members utilizing the Program will be allowed, after completing Program enrollment, to visit any and all Healthways Network participating locations offering the Healthways Program for which they are eligible. Reciprocity rights under this Agreement shall not include locations of Facility or other affiliated facilities not specifically set forth in Exhibit A.
 - i) Healthways Fitness Provider Portal. All Facility participating locations shall create and maintain user accounts on the web-based Healthways Fitness Provider Portal. Facility shall utilize the Healthways Fitness Provider Portal to verify Member eligibility and to obtain and access Healthways materials, including Sponsoring Organization information, training materials, Program forms, Program reports, and the Reference Guide.
3. Compensation. As payment for Program services, Healthways shall pay Facility according to the terms set forth in each applicable Program Schedule attached hereto for services provided on or after the Program Ready Date. Compensation paid by Healthways is inclusive of any and all taxes which Facility may be required to pay to any governmental authority. Healthways will make payment to Facility via electronic funds transfer.
4. Term.
- a) Initial Term and Ready Date. This Agreement will commence upon execution by the Parties, and shall continue in full force and effect until March 31, 2017 (“Initial Term”), subject to cancellation as provided in the Cancellation/Termination section below. Services to Members and payment for such services shall commence on a date following the commencement of this Agreement that shall be communicated to Facility by Healthways (“Ready Date”). The Initial Term and any and all Renewal Terms are referred to herein as the “Term”.
 - b) Renewal of Agreement. This Agreement shall be automatically renewed for successive one year terms after the Initial Term (the “Renewal Term”) unless either party gives written notice of termination at least one hundred twenty (120) days prior to the expiration of the Initial Term or the current Renewal Term of the Agreement or unless the Agreement is canceled pursuant to the Cancellation/Termination section below.
5. Cancellation/Termination.
- a) Change in Terms; Poor Usage. Healthways retains, upon thirty (30) days’ written notice, the right to terminate this Agreement or the participation by Facility under any Program Schedule for any location of Facility in Exhibit A on the basis of, in Healthways sole and reasonable discretion, poor usage of Facility by Members or upon termination or change in terms of a Sponsoring Organization’s contract with Healthways. In the event Healthways removes Facility from the Healthways Network, Facility shall be compensated per this Agreement for services rendered up to and including the date of cancellation.
 - b) Bankruptcy. Notwithstanding any provision in this Agreement, if at any time there shall be filed by or against a party to this Agreement, in any court, tribunal, administrative agency, or any other forum having jurisdiction, pursuant to any applicable law, either of the United States or of any state, a petition in bankruptcy or insolvency or for reorganization or for the appointment of a receiver, trustee, or conservator of all or a portion of the party's property, or if a party makes an assignment for the benefit of creditors, and if this action is not dismissed after ninety (90) calendar days, this Agreement may be immediately canceled and terminated by the other party.
 - c) Material Breach. If either party breaches any material term or condition of this Agreement, this Agreement may be terminated after written notice of such breach or default by the non-breaching party to the breaching party. The notice must specify the nature of said material breach and provide the breaching party thirty (30) days from receipt of the

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- notice to correct the material breach. In the event the breaching party fails to cure the material breach within the thirty (30) day period, this Agreement shall automatically terminate upon completion of the thirty (30) day period, notwithstanding any other provision in this Agreement.
- d) Early Termination. Notwithstanding any other provision of this Agreement, Healthways may terminate this Agreement at any time upon notice to Facility due to 1) failure of Facility to maintain required insurance coverage as set forth in this Agreement; 2) closure of Facility, resulting in denial of Program services to Members, without at least thirty (30) days' prior written notice to Healthways; 3) fraudulent Program utilization reporting by Facility; or 4) Healthways' reasonable determination that the health or safety of Members may be in jeopardy if this Agreement is not terminated.
 - c) Default. In the event that Facility defaults under this Agreement or the Agreement is terminated pursuant to the Material Breach section or the Early Termination section above, Healthways may, at its sole discretion and without limiting other remedies available to Healthways at law or in equity, withhold payment of any amounts otherwise due and payable to Facility under this Agreement.
 - f) Termination for Convenience. Upon forty-five (45) days prior written notice, Healthways may terminate this Agreement for convenience without any further obligation or liability to Facility apart from liability for fees payable to Facility under this Agreement up to the effective date of termination.
6. Confidentiality. All Confidential Information between Healthways and Facility are shared in strictest confidence. During the Term and at all times thereafter, Facility shall not divulge, furnish or make accessible to anyone or use in any way (other than use in the ordinary course of providing services under this Agreement) any Confidential Information, **except where any such Confidential Information is subject to disclosure by Facility pursuant to State Law**. Facility shall return to Healthways all of Healthways' materials (including any and all copies of such materials) used in the provision of the Program, including the Reference Guide and Member files, upon completion of this Agreement or in the event of its termination, or at any other time upon request from Healthways.
7. Member Contact. Facility agrees to not directly contact Members during the Term of this Agreement in regard to business related matters pertaining to the Program, such as, but not limited to, switching health care plans, disenrolling, enrolling with other health care plans or similar entities, or contracting directly with Facility instead of Healthways and Sponsoring Organization.
8. Insurance. Facility shall obtain and maintain in force Acceptable general liability insurance coverage in an amount of at least \$1,000,000 per occurrence. In the event that coverage is self-insured or maintained by a risk management pool, insurance trust, assurance pool or risk retention group, coverage is subject to prior approval by Healthways. Facility shall cause such insurance to require that the carrier will list Healthways as certificate holder and shall notify Healthways of expiration, termination, or cancellation at least thirty (30) days prior to any expiration, termination, or cancellation of such policy. Facility shall provide a current certificate of insurance with this Agreement and within ten (10) days of request by Healthways thereafter. **PLEASE ATTACH A COPY OF FACILITY LIABILITY POLICY FACE SHEET.**

Facility shall cause American Healthways Services, LLC, to be named as an additional insured on its general liability insurance policy "for all services provided under the contract agreement between Healthways and the insured." Any exception to the additional insured provision must have prior approval by Healthways. Facility shall provide such certificate of insurance to Healthways no later than thirty (30) days after Program Ready Date and within ten (10) days of request by Healthways thereafter.

9. Notices. Unless expressly provided otherwise, all notices, requests, demands and other communications required or permitted under this Agreement shall be in writing and shall be deemed to have been duly given, made and received when sent by 1) Electronic Mail; or 2) hand delivery, including by a recognized courier service; or 3) registered or certified mail, postage prepaid, return receipt requested. Notices under the Agreement to Facility shall be to the Contract Administrator in Exhibit A-2. Notices under the Agreement to Healthways shall be to: Healthways Provider Networks Department, 1445 South Spectrum Blvd., Suite 100, Chandler, Arizona 85286.

Facility shall provide a minimum of ten (10) days notice to Healthways in the event of a change in any of the information provided in Exhibit A of this Agreement. Either party may alter the address to which communications or copies are to be sent by giving notice of such change of address in conformity with the provisions of this section for the giving of notice.

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10. Miscellaneous.

- a) Compliance with Federal and State Rules and Regulations. For the Term of this Agreement, Facility shall comply with all applicable federal and state rules and regulations regarding services provided to Members.
- b) Business License and Regulatory Standards. Facility shall hold an active and unrestricted business license as required by law, covering all aspects of services offered, and meet occupational health and safety requirements and regulatory standards in the state and jurisdiction in which Facility operates.
- c) Priority of Documents. Any conflict, ambiguity or inconsistency between the terms and conditions in this Agreement, the Program Schedule(s), the Exhibits and any document referred to in or incorporated into this Agreement shall be resolved in accordance with the following decreasing order of priority: i. this Agreement; ii. The Program Schedule(s); iii. the Exhibits; and iv. such other referenced or incorporated documents.
- d) Severability. Should any provision herein be determined by any court of competent jurisdiction to be illegal, invalid or unenforceable in any respect, in whole or in part, the offending provisions shall not affect the enforceability of the remaining provisions of this Agreement.
- e) Amendment of Agreement to Comply with Law. Both Parties acknowledge and agree that **either Party** may amend this Agreement in order to comply with applicable law, by sixty (60) days' prior written notice **to the other Party**, and that **the other Party** may elect to withdraw its acceptance with regard to such amendment within such sixty (60) day period if such amendment would have a material adverse effect on **the other Party**.
- f) Applicable Law. The validity of this Agreement and of any of its terms and provisions, as well as the rights and duties of the Parties hereunder, shall be interpreted and enforced pursuant to and in accordance with the laws of the State of Tennessee.
- g) Counterparts. This Agreement may be executed in any number of counterparts and by different Parties hereto in separate counterparts, with the same effect as if all Parties had signed the same document. All such counterparts shall be deemed an original, shall be construed together and shall constitute one and the same instrument.
- h) Entire Agreement. This Agreement, together with any Exhibits and Schedule(s) hereto, represents the entire understanding and agreement among the Parties with respect to the subject matter hereof and shall supersede any prior writings, understandings, or agreements among the Parties with respect to the subject matter hereof.
- i) Modification. Unless specifically set forth in this Agreement, no alteration, amendment, waiver, cancellation or any other change in any term or condition of this Agreement shall be valid or binding on either Party unless the same shall have been mutually agreed to in writing by both Parties.
- j) Sale of Business/Transfer of Assets. If Facility desires to sell or transfer all or substantially all of its assets or business to another entity, or transfers to a third party a controlling interest in its assets or business, Facility shall so advise Healthways in writing at least ninety (90) days' prior to the sale or transfer date. Upon notification of sale, Healthways may, in its sole discretion, choose to terminate the Agreement effective on date of sale or extend the terms of the Agreement to the new entity.
- k) Authority to Sign. The individual signing below on behalf of Facility represents and warrants that he/she has all requisite corporate power and authority to enter into this Agreement on behalf of Facility.

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IN WITNESS WHEREOF, the Parties have agreed as set forth above.

AMERICAN HEALTHWAYS SERVICES, LLC

St. George Recreation Center
Name of Facility

Signature

Signature

Joy Powell

Jonathan T. Pike
Printed Name

Senior Solutions Division President

Mayor, City of St. George
Title

Date

Date

PROGRAM SCHEDULE

Program Name: Mature Market Fully Subsidized Program

Program Brands: SilverSneakers® Fitness program, SilverSneakers Private Brand, Healthways ACCESS, and other brand names for the Mature Market Fully Subsidized Program communicated to Facility by Healthways from time to time

Member Type: Medicare, Group Retirees and Older Adults

Program Description: The Program is offered to Members of the Sponsoring Organization. The Program includes SilverSneakers exercise classes and basic fitness membership services, which may include other Healthways services, for Members provided through a network of facilities; also included in the Program are all facets presented in the Duties and Obligations of Facility section of the Agreement.

1. Program Duties and Obligations of Facility. In exchange for the compensation to be paid by Healthways, Facility shall perform the following services:
 - a) Program Implementation Process. To prepare for Program commencement, Facility agrees to participate in the following 1) coordination with Healthways of electronic reporting containing the required data elements; 2) Healthways-scheduled and led training; and 3) Healthways' evaluation of Facility prior to the Program Ready Date to certify Facility's preparedness to provide Program.
 - b) Staffed Hours. Facility shall be appropriately staffed in accordance with professionally-recognized standards of fitness programs a minimum of six (6) hours per day, Monday through Friday.
 - c) Program Enrollment. Facility shall enroll Members in the Program in accordance with the protocol defined in the Reference Guide or other protocol mutually agreed between the Parties.
 - d) Reporting Obligations of Facility. Facility shall report Program utilization to Healthways on a monthly basis. Program utilization reporting shall consist of all 1) Program forms completed during the previous month as applicable; and 2) visits for the month. Facility shall prepare a report of daily visits and utilization from the month summarizing activity and containing the required data elements and submit it electronically to Healthways no later than the fifth (5th) day of the following month. The required file format, data elements and submission options are defined in the Reference Guide. The Parties to this Agreement shall work cooperatively to establish correct and acceptable electronic monthly utilization data reporting; Healthways may provide technical support to Facility if necessary.
 - e) Facility Staff Training. Facility staff who have regular contact with Members are required to participate in Healthways training prior to commencement of the Program and as needed thereafter to account for staff turnover and to ensure proper service for Members.
 - f) SilverSneakers Program Advisor. Facility shall designate one staff member as the SilverSneakers Program Advisor, who shall serve as a liaison to Healthways and as a resource person for SilverSneakers Members utilizing the Healthways Network, and is knowledgeable concerning all services provided by Facility to Members.
 - g) Guest Pass Program. Facility shall provide Program services to persons presenting a Healthways guest pass. Properly documented guest visits will be counted the same as a Member visit for purposes of calculating Facility's compensation.
2. Medicare Compliance for Program(s) Provided to Medicare Recipients. In recognition that Sponsoring Organization and its subcontractors may be obligated to comply with all applicable federal governmental regulations regarding services to Medicare members, including the rules and regulations of the Centers for

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Medicare and Medicaid Services (CMS), Healthways and Facility mutually agree to comply with the following for services provided to Medicare members.

- a) Compliance with Federal and State Laws. Facility acknowledges that payments made to Facility under this Agreement may be made from federal funds. Therefore, in connection with all services rendered under the Agreement, Facility agrees to comply with the requirements of the contracts between Healthways' customers and CMS (the "CMS Contracts"), and all applicable federal and state laws and regulations and CMS guidance and instructions, including, but not limited to all Medicare laws, such as the Medicare Modernization Act and the regulations contained in 42 CFR Parts 422 and 423; all applicable state and federal privacy and security requirements, including but not limited to the confidentiality, privacy and security provisions for Medicare health plans contained in the regulations found at 42 CFR 422.118 and 42 CFR 423.136; and all applicable laws, regulations and guidance designed to prevent fraud, waste or abuse of federal funds, including the False Claims Act (31 U.S.C. 3729 et seq.), the Anti-kickback statute (Social Security Act § 1128B(b)), and HIPAA administrative simplification rules (45 CFR Parts 160, 162, and 164).
- b) Right to Inspect. Facility acknowledges and agrees that the Department of Health and Human Services (HHS), the Comptroller General, or their designees, or any applicable state or federal governmental entity, or Sponsoring Organization, shall have the right to inspect, evaluate, and audit any pertinent contracts, books, documents, papers, and records involving transactions related to services provided under this Agreement to Medicare Members. Facility shall maintain accurate records of compliance with this Agreement ("Records") in accordance with recognized accounting and document retention practices and in a format that shall permit audit. Such Records shall be maintained by Facility for a period of ten (10) years following expiration or termination of this Agreement. This right to inspect shall extend for a period of ten (10) years from the termination date of the CMS Contracts (or applicable CMS Contract), or the date of completion of any audit in connection with the Medicare health plans, whichever is later. Facility will make its books and other records available in accordance with 42 CFR 422.504(i)(2) and 42 CFR 423.505(i)(2) and any other applicable laws and regulations. In the event Facility is unable to retain such records for ten (10) years, Facility shall provide the records to Healthways at the conclusion of this Agreement and Healthways will retain the records on behalf of Facility.
- c) External Review. Facility agrees to cooperate with all independent quality review and improvement organization activities required by CMS and/or Sponsoring Organization pertaining to the provision of services to Sponsoring Organization Members.
- d) Privacy/Confidentiality. Facility agrees to safeguard the privacy of any information that identifies a particular Sponsoring Organization Member in accordance with federal and state laws and Sponsoring Organization policy and to maintain Sponsoring Organization Members' records in an accurate and timely manner.
- e) Non-Discrimination. Facility agrees to not discriminate against any person because of race, sex, age, marital status, national origin, religion, color, citizenship, disability, health status, health insurance coverage or veteran status. As applicable, Facility agrees to comply with 1) Title VI of the Civil Rights Act of 1964 as implemented by regulations at 45 CFR Part 84; 2) The Age Discrimination Act of 1975 as implemented by regulations at 45 CFR Part 91; 3) The Americans With Disabilities Act; 4) The Rehabilitation Act of 1973; 5) Other laws applicable to recipients of federal funds; and 6) All other applicable laws and rules. This Agreement incorporates by reference and is subject to the following regulations of the Office of Federal Contract Compliance Programs, Department of Labor: 41 C.F.R. §60-1.4, Equal Opportunity Clause; 41 C.F.R. §60-250.5, Equal Opportunity Clause and Affirmative Action Clause for Special Disabled Veterans and Veterans of the Vietnam Era; 41 C.F.R. §60-741.5, Equal Opportunity Clause and Affirmative Action Clause for Handicapped and Disabled Persons. Facility agrees not to discriminate against any Medicare Member on the basis of any factor that is related to health status, including, but not limited to the following: (1) medical condition, including mental as well as physical illness; (2) claims experience; (3) receipt of health care; (4) medical history; (5) genetic information; (6) evidence of insurability, including conditions arising out of acts of domestic violence; and (7) disability.
- f) Exclusion of Certain Persons. Facility certifies that neither it nor any of its principals (officers, directors, owners, partners, key employees, principal investigators, researchers or management or supervisory personnel) (Principals) is presently debarred, suspended, proposed for debarment, declared ineligible or

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excluded from participation in any federal grant, benefit, contract or program (including, but not limited to, Medicare and Medicaid) by any Federal department or agency. Facility agrees to provide immediate written notice to Healthways if it learns at any time that the certification herein was erroneous when submitted or if, during the Term of this Agreement, it, or any of its Principals, is debarred, suspended, proposed for debarment, declared ineligible or excluded from participation in any federal grant, benefit, contract or program. If subcontracting is permitted by the Agreement, Facility agrees that its subcontractors will comply with the foregoing covenant. Facility agrees that debarment, suspension, proposed debarment or suspension, ineligibility or exclusion of either party, or any of its principals or subcontractors, shall constitute cause for immediate termination of this Agreement. Facility further agrees to comply with all Federal anti-terrorism rules and regulations. Each party's signature below shall serve as certification that, to the best of the party's knowledge, the party 1) is not; 2) has not been designated as; 3) is not owned, affiliated, or controlled by; and 4) does not support, assist or aid a suspected terrorist organization or individual as defined by Federal law including, but not limited to, Executive Order 13224.

- g) Hold Harmless. With the exception of charges for services not covered under this Agreement, Facility shall in no event bill, charge, collect a deposit from, or hold liable for any debts of Healthways or Facility, Members or any applicable government agency. In the event a Member provides payment to Facility for services provided pursuant to this Agreement, Healthways retains the right to deduct an equivalent amount from the compensation payable to Facility for the purpose of Member reimbursement. All obligations under this section shall survive the termination of this Agreement, regardless of the cause giving rise to such termination, including, without limitation, insolvency of either party or breach of this Agreement.
- h) Waiver of Claims and Indemnity. Unless caused by the gross negligence or intentional wrongdoing of Healthways, Sponsoring Organization, or any applicable government agency, Facility hereby waives and releases all claims against Healthways, Sponsoring Organization, and applicable government agency, and/or any of their respective officers, directors, shareholders, employees, or representatives, in respect of a Member participating in the Healthways Network, and Healthways, Sponsoring Organization, and government agency shall not be liable for injury to person or damage to property sustained by Sponsoring Organization's Members as a result of participation in any activities which may be undertaken in or sponsored by Facility, including, but not limited, to any accident, or from any occurrence, or act, or from negligence or omission on the part of Facility or any employee or agent thereof. Facility shall indemnify, defend, and hold harmless Healthways, Sponsoring Organization, Members, and applicable government agency and their respective officers, directors, shareholders, employees, and representatives, on a current basis, from any and all claims, demands, suits, liabilities, damages, obligations, and expenses (including without limitation reasonable attorneys' fees) arising out of or in any way related to any negligent act or other wrongful conduct by Facility under this Agreement, except to the extent caused by the gross negligence or intentional wrongdoing of Healthways, Sponsoring Organization, or applicable government agency.

Healthways and Facility agree that to the extent permitted by law, the Parties shall cooperate with one another in the defense of any claim arising from alleged tortious acts of their respective officers, shareholders, employees, or agents and to give one another written notice of any claims covered by this paragraph. All obligations under this section shall survive the termination of this Agreement, regardless of the cause giving rise to such termination, including, without limitation, insolvency of either party or breach of this Agreement.

- i) Professionally-Recognized Standards. Healthways and Facility shall provide the Program to Sponsoring Organization Members in a manner consistent with quality assurance standards, the Reference Guide, and professionally-recognized standards of fitness and wellness programs.

3. Compensation.

- a) Program Utilization Payment. Healthways shall compensate Facility \$2.50 per Program Visit, up to a maximum of \$20.00 per Program Participant per month. Program Visit shall mean one distinct occasion, recorded and reported by Facility in accordance with procedures specified in the Reference Guide, during which a Member enters Facility to enroll in or use the Program. Healthways shall not compensate Facility for more than one Program Visit per day. Program Participant shall mean a Member, who, after completing

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the Program enrollment, has used the Program at a facility in the Healthways Network at least once in a given month.

- b) Payment Schedule. Payment shall be processed for direct deposit by Healthways by the last day of the month following the month in which Program Visits occurred (“following month”), provided Healthways receives Facility’s monthly utilization data by the fifth (5th) day of the following month. In the event utilization data is not received in a timely manner, payment may be delayed. Payment for monthly utilization received after the last day of the following month will be denied for non-timely filing and will not be eligible for reimbursement or appeal. Appeals must be brought to the attention of Healthways within thirty (30) days of receipt of payment; appeals brought at a later date will not be eligible for review.

EXHIBIT A-1

FACILITY INFORMATION

The information in the box below is intended for marketing purposes. Please confirm that it is accurate.

Facility Name:	St. George Recreation Center
Physical Address:	285 South 400 East
	St. George, UT 84770
Phone Number:	435-627-4560
Web Site Address:	http://www.sgcity.org/departments/recreation/facilities/rec_center.php
<i>*To enable marketing of amenities and services are marketed, please designate your basic amenities below and all amenities upon initial log in to the Fitness Provider Portal.</i>	
Amenity/Program	<input checked="" type="checkbox"/> Offered as part of basic membership at no additional cost to Members
Cardiovascular Equipment	X
Group Exercise/Aerobics Area	X
Hot Tub/Whirlpool	
Resistance Training Equipment	X
Steam and/or Sauna	
Swimming Pool – Seasonal (not available throughout the year)	
Swimming Pool – Year-Round	

Fax: (435) 627-4569 Direct Fax Need to call first

General Email: recreation@sgcity.org

Who will be our primary location contact (Healthways Program Advisor)? This individual will be responsible for scheduling training, coordinating with our Provider Services Liuison, and will need access to member records.

Contact Person: Christopher Beckstead

Contact Title: Recreation Coordinator II - Rec Center

Contact Phone: (435) 627-4564

Contact Fax: (435) 627-4569

Contact Email: chris.beckstead@sgcity.org

Mailing Address (if not the same as Physical Address):

Mailing Address: <u>same</u>

Shipping Address (if not the same as Physical Address):

Shipping Address: <u>same</u>

Staffed Hours of Operation

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Open	Closed	5:30a	5:30a	5:30a	5:30a	5:30a	7:00a
Closed	Closed	10:00p	10:00p	10:00p	10:00p	10:00p	6:00p

Are Members able to access Facility during unstaffed hours? No Yes

What non-English languages does staff speak fluently? Please list: N/A

Please select one category that best describes Facility:

- Commercial
- Hotel or Resort
- JCC
- Kroc Center
- Medical with physical therapy
- Medical without physical therapy
- Municipal
- US Tennis Association
- YMCA
- YWCA
- Other not-for-profit
- Senior living - Independent Living
- Senior living - Assisted Living
- Senior living - Residential Care
- Senior living - Continuing Care
- Senior living - Nursing Home

Please select one location type:

- Men and women
- Women only
- Men only

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EXHIBIT A-2

CONTRACT ADMINISTRATOR

Name: Melea Adams

Title: Leisure Services Financial Associate

Mailing Address: 220 N. 200 E., St. George, UT 84770

Phone: (435) 627-4566

Fax: (435) 627-4569

Email: melea.adams@sgcity.org

The Contract Administrator shall receive legal correspondence regarding the Agreement, shall have access to payment information for all Facilities in Exhibit A-1 to this Agreement, and shall be responsible for setting up Healthways Fitness Provider Portal accounts for Facility staff.

Who should Healthways contact to coordinate the technical aspects of monthly utilization data reporting? This individual will need to have specific information about your location's reporting capabilities, and be responsible for obtaining management approval for establishing a reporting method.

Name: Melea Adams

Phone: 435-627-4566

Email: melea.adams@sgcity.org

