WaterSMART Grants

Water and Energy Efficiency Grants for Fiscal Year 2021

Bureau of Reclamation FOA No. BOR-DO-21-F001

City of SANTA BARBARA

Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade

September 17, 2020

Submitted To:
Bureau of Reclamation
Financial Assistance Support
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Executive Summary

Date: September 17, 2020

Applicant Name: City of Santa Barbara – Public Works Department, Water Resources Division

City, County, and State: City of Santa Barbara, Santa Barbara County, California

Project Manager:

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Funding Group: Group I

Grant Funding Request: $500,000

Non-Federal Matching Funds: $936,211

Total Project Cost: $1,436,211

Project Duration: 24 months

Estimated Project Completion Date: March 2023

Located on Federal Facility: No

Unique Entity Identifier: 0620767650000

Project Summary

The City of Santa Barbara (City), located in coastal Southern California, is proposing to upgrade approximately 25,500 meter registers from 6-dials to 8-dials as Phase III of the City's larger Advanced Metering Infrastructure (AMI) project. Since the installation of the City's meters, the meter manufacturer has upgraded the meter model to an 8-dial register, which enables the meters to transmit data on smaller volumes of water through AMI networks. Upgrading the City's meter registers would provide significantly more discrete resolution of the water use data. This would enable customers to address smaller leaks and inefficient water uses, and further reduce their water use and their water bills. The project is anticipated to result in water savings of 215 acre-feet per year (AFY), which will better prepare the City for prolonged drought conditions. The water conserved will offset groundwater pumping, will reduce the City's dependence on water imported through the State Water Project during drought years, and will improve overall water reliability by reducing demand on water supply sources.

Project Location

The Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade project is located in the City of Santa Barbara and a portion of unincorporated Santa Barbara County, within the County of Santa Barbara, State of California. The City of Santa Barbara is located approximately 100 miles west and north of downtown Los Angeles. See Figure 1 below showing the City's water service area which serves as the boundaries for the proposed project; the project will take place in the City's existing meter and valve boxes. The City's service area is approximately 20 square miles with a population of approximately 95,000.

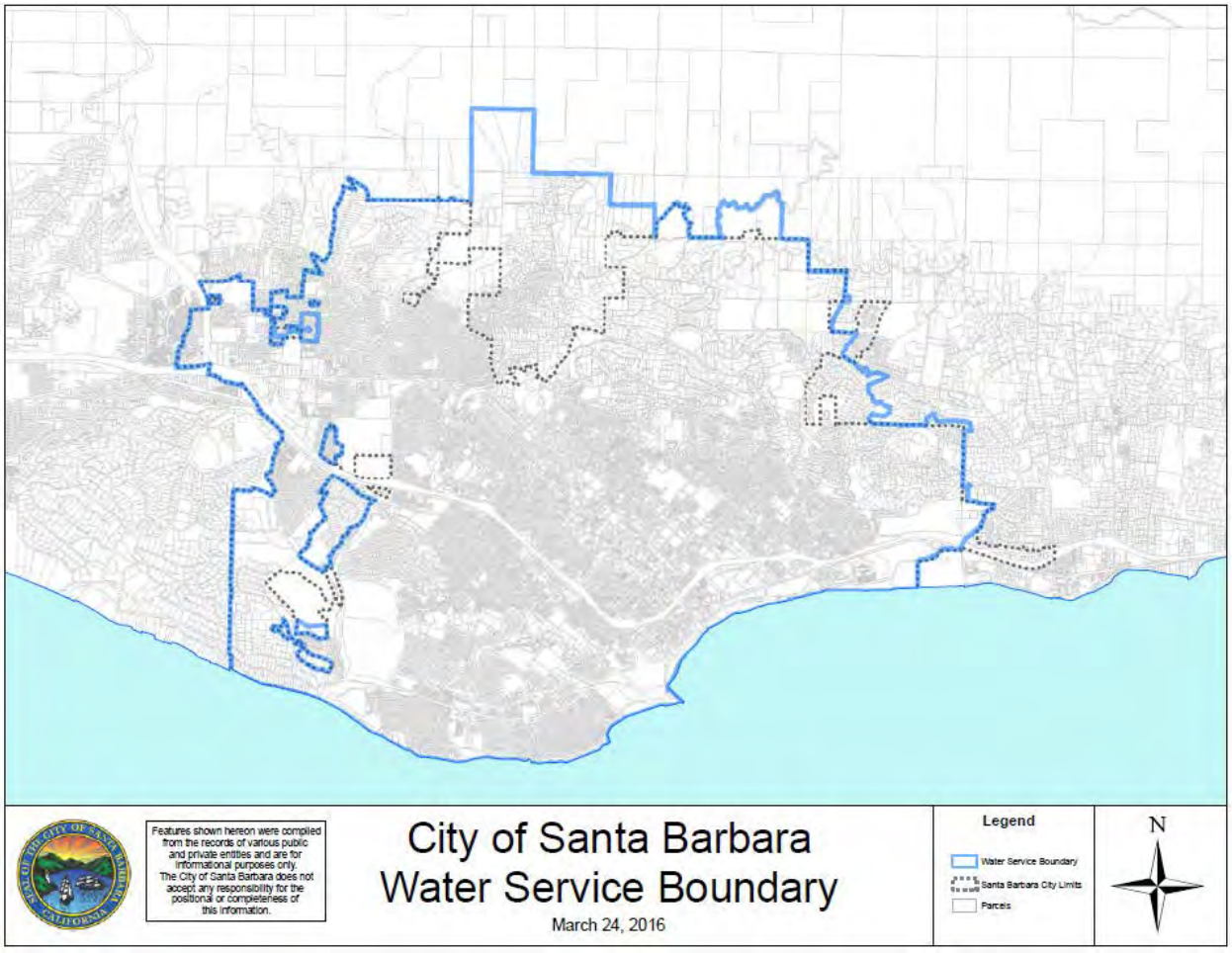


Figure 1 – Project Location

Technical Project Description

Since the installation of the City's meters, the meter manufacturer has upgraded the meter model to an 8-dial register, which enables the meters to transmit data on smaller volumes of water through AMI networks. As part of an effort to maximize the benefits of implementing an AMI system and gaining the further advantage of water savings from leak detection, the City is proposing to replace its 6-dial low-resolution meter registers with the upgraded 8-dial high-resolution meter registers.

Water meters consist of a meter body and register. The meter body mechanism interacts with water movement within the meter to measure the water volume passing through the meter. The register records that measurement. The register component can be upgraded, while leaving the existing body in place. The existing 6-dial registers are only capable of reporting one cubic foot (7.5 gallons) per reporting interval, whereas the 8-dial registers are capable of reporting down to 0.01 cubic feet (0.075 gallons) per reporting interval. This is important because low flow leaks often occur under 7.5 gallons per hour and would otherwise go undetected as continuous usage; therefore, they would not be flagged as leaks in an AMI system. These undetected low flow leaks are often masked as regular consumption.

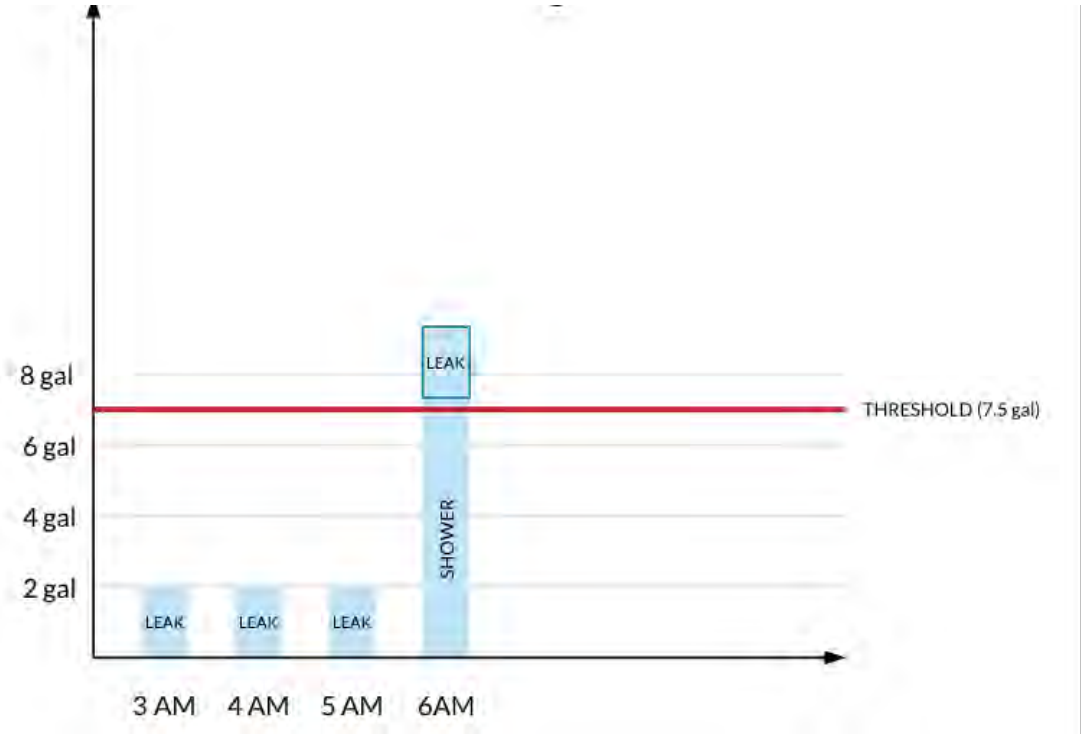


Figure 2 - Low Flow Leak Profile vs 6-Dial Register Threshold

Figure 2 shows a low flow leak of 2 gallons per hour (48 gallons per day). The red line represents the 7.5 gallon threshold and is the lowest a 6-dial register is capable of reporting each hour. The AMI endpoint transmits the hour interval data to the AMI system as an hourly read of 0, not 2

gallons. As shown in Figure 3, the 6-dial register will report 0 gallons for the 1st, 2nd, and 3rd hour. For the 4th hour, the 2 gallon per hour leak has wasted 8 gallons, surpassing the 7.5 gallon threshold. The water usage from the leak shows as an additional 8 gallons attributed to the 4th hour—the hour when the threshold was reached. Because the low flow leak is added to that next hourly interval, it is often masked as regular consumption. Below, Figure 3 displays how masked consumption can occur.

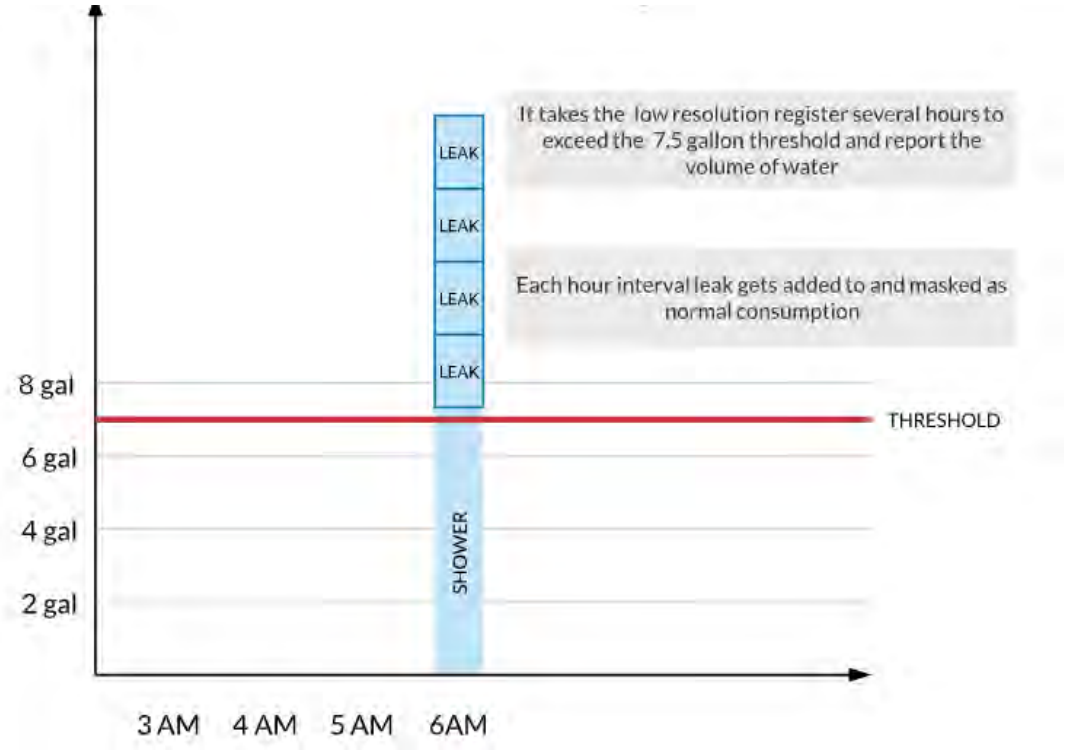


Figure 3 - Masked Consumption with 6-Dial Register

In this scenario, the 8 gallons of water from the leak would be masked as a high volume shower rather than a continuous leak.

When using an 8-dial high-resolution register, the high-resolution register will have a threshold that goes down to 0.01 cubic feet (0.075 gallons) per reporting interval. If the above 2 gallon per hour leak were to occur on a property with an 8-dial register, the register would report consecutive hourly reads of 2 gallons. The AMI endpoint would send back the data to the head end system and flag the usage as a possible leak. Below, Figure 4 displays how the high-resolution 8-dial register records the 2 gallon leak. It is important to note that many AMI systems require the detection of continuous usage in order to flag usage as a potential leak.

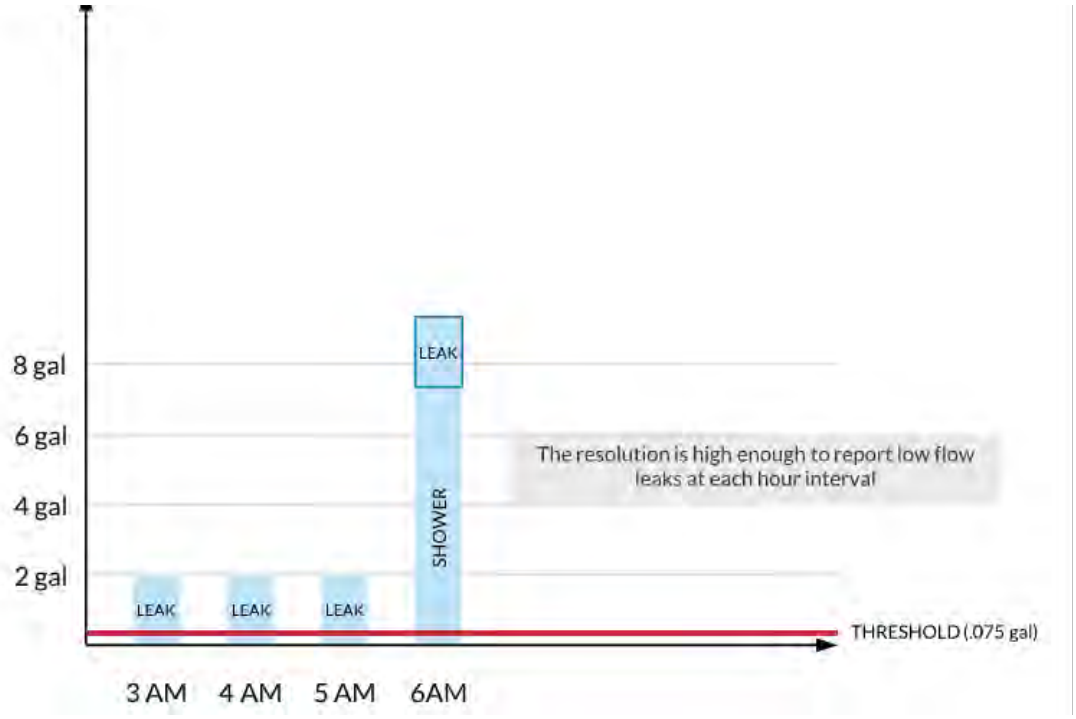


Figure 4 – Low Flow Leak with 8-Dial Register

Table 1 below breaks down the low flow leaks that would likely go undetected when using a low-resolution 6-dial register in gallons per day (GPD) and in gallons per hour (GPH).

Table 1 – Low Flow Leaks

GPD	20	30	40	50	60	70	80	90	100	150	175	*180*
GPH	0.83	1.25	1.67	2.08	2.50	2.92	3.33	3.75	4.17	6.25	7.29	*7.50*

Currently, the City has an inventory of about 2,000 Badger HRE 8-dial high-resolution meter registers and about 25,500 Badger HRE 6-dial low-resolution meter registers. The City proposes to have all meters paired with 8-dial high-resolution registers. This will increase the customers' and the City's ability to detect low flow leaks and address them. Having a meter population with a homogeneous register population will provide the same leak detection capabilities to all the City's customers instead of just a small portion. This will also be worthwhile for analytical and reporting purposes when responding to state and federal agencies.

Figure 5 – The 8-dial meter register (left) can report usage down to 0.01 cubic feet, or 0.075 gallons. The 6-dial register (right) reports usage down to 1 cubic foot, or 7.5 gallons.

The process of replacing a meter register is relatively simple. First, the installer unscrews a single screw from the register. Second, they will twist off the old register and twist on the new one. Third, they screw the screw back in, and the task is completed. The process of replacing a register would add an estimated 6 minutes to the total installation time of the AMI endpoint and lid, which are to be installed as part of a separate project. An estimated 3 minutes would be needed to update the City's billing system with the replacement register information.

The City will determine whether to contract out the 8-dial register installations or perform the installation work in-house with a City workforce after the City receives installation bids from vendors in response to the City's AMI Request for Proposals that was released on September 3, 2020. The City will evaluate the bids for the most efficient and cost effective step forward for installing the 8-dial registers.

Evaluation Criteria

E.1.1. Evaluation Criterion A—Quantifiable Water Savings: Municipal Metering

Describe the amount of estimated water savings. For projects that conserve water, please state the estimated amount of water expected to be conserved (in acre-feet per year) as a direct result of this project.

The proposed project of replacing low-resolution 6-dial registers with high-resolution 8-dial registers will improve the effectiveness of the City's AMI system and is estimated to save 215 acre-feet per year (AFY). These savings will come from customers who fix low-flow private property leaks after notification from the AMI customer portal and/or City staff outreach. Without the 8-dial registers, the low flow leaks may otherwise go unreported and unfixed.

Describe current losses: Please explain where the water that will be conserved is currently going (e.g., back to the stream, spilled at the end of the ditch, seeping into the ground)?

Depending on the source of the leak and property characteristics, the water from customer-side low flow leaks could be lost down the sanitary sewer, seep into the soil, or drain off the property into a storm drain.

Describe the support/documentation of estimated water savings: Please provide sufficient detail supporting how the estimate was determined, including all supporting calculations.

Replacing the City's 6-dial low-resolution meter registers with 8-dial high-resolution meter registers will allow the City to maximize the benefits of implementing an AMI system. Upgrading to 8-dial registers will enable the AMI system to report low flow leaks that otherwise would have remained unidentified. This effort will result in tangible water savings.

The AMI endpoint collects water usage data from the water meter every hour. The existing 6-dial registers on the City's water meters are limited to reporting one cubic foot (approximately 7.5 gallons) or more per hour interval. This means that if a customer has a leak below the 7.5 gallon threshold, the 6-dial register would report no water usage for that hour. The water usage would only be reported after enough hours had passed, so that the cumulative amount of water leaked exceeded the threshold. For example, a 2 gallon per hour leak would be reported as no usage for three hours, before appearing as 8 gallons used in the fourth hour. If other usage is occurring at the property, the leak can be masked as normal water usage (see Figures 6 and 7 below).

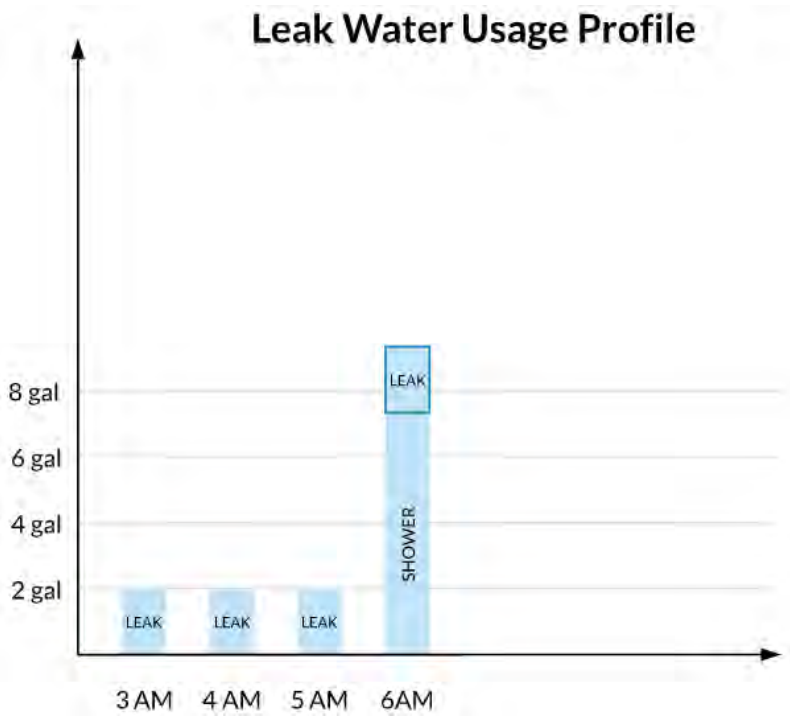


Figure 6- The water usage profile at a property with a 2 GPH leak. A key factor in identifying leaks in an AMI system is continuous water usage, with no period of zero consumption.

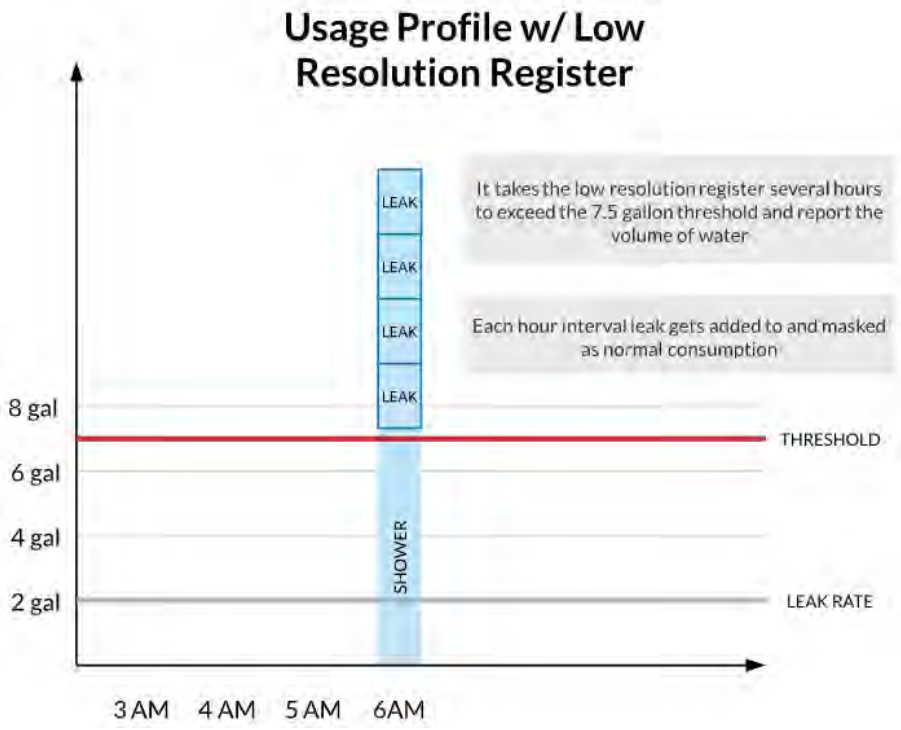


Figure 7- The water usage profile of a property with a 2 GPH leak and a 6-dial register. The resolution of the register is not high enough to report the leak every hour. The result is a water usage profile that masks the existence of the leak.

Masked water consumption creates a problem when trying to identify leaks from water usage patterns. The key factor in identifying a leak in water usage data is continuous usage (Figure 6). If the register does not report usage every interval, it makes it difficult for the customer, City staff, and the AMI system to recognize that a leak is occurring. The leak would continue to waste water without being flagged by the system.

The high-resolution 8-dial registers can report down to 0.01 cubic feet (0.075 gallons) and reduce the possibility of masking leaks from the AMI system and customer (Figure 8). Once the AMI system recognizes a leak profile, it flags the leak and sends an automatic leak notification to the customer. Leak notifications will take the form of emails for most customers. Customers may also opt-in to receive text notifications. A postcard will be sent to customers for whom the City does not have an email address. The leak notification will contain information on where the customer can find resources to help them identify and repair the leak, and contact information for the City's Water Conservation Program should they need assistance.

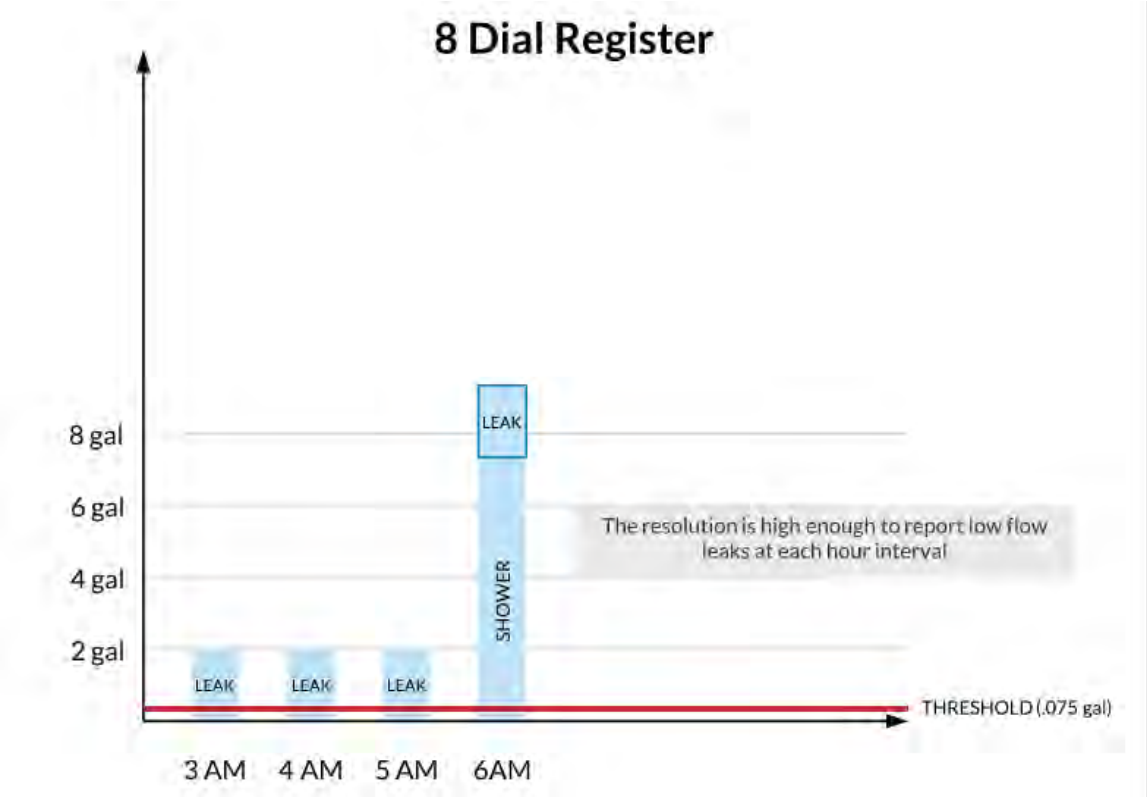


Figure 8 - A water consumption profile of a property with a 2 GPH leak as reported by a meter with an 8-dial register. The resolution of the register is high enough to pick up the low flow leak and show a clear leak profile. Regular usage does not mask the leak.

Replacing low-resolution 6-dial registers with high-resolution 8-dial registers will improve the AMI system's effectiveness and ultimately save an estimated 215 AF per year. These savings will come from customers fixing low flow private property leaks after notification from the AMI customer portal and/or City staff outreach. Without the 8-dial registers, the low flow leaks may otherwise go unreported and unfixed. The high-resolution dials will allow the City to alert

property owners of potential low flow leaks, reducing customer water use, and improving water use efficiency among the City's water customers.

The City has been implementing an AMI pilot with approximately 400 meters, all of which are 6-dial meters. Pilot customers have access to their hourly water use data through an online customer portal. The City has encountered customers who are confused by the low-resolution water usage data, as it is difficult to correlate daily low water use actions with the water use data displayed. Customers will see an added benefit of higher resolution data more closely resembling their incremental water use each day. The ability to see the flow data of a potentially faulty plumbing fixture, such as a toilet, or the ability to calculate the water usage of an irrigation zone will enable customers to make adjustments and repairs and see the results of the repairs in their hourly water use.

Besides low flow leak detection, there are two additional benefits to water customers with higher resolution registers: (1) higher resolution hourly data is important for customer education about their water use; and, (2) the availability of high-resolution, incremental water use data builds confidence in the accuracy of billing and trust in the AMI technology. For example, a customer could check their water use in their online customer portal after brushing their teeth and using the toilet. With a 6-dial register the customer would not see their water data change unless they use over 7.5 gallons, it would show zero usage for that hourly increment. This may lead to concern that the meter is inaccurately recording their water use. If a customer is able to see up to 0.075 gallons of water use reflected in the high-resolution AMI data, they will learn more about common small water usage events and have an easier time trusting that the AMI technology is accurate. As plumbing fixtures become progressively more efficient, conveying these lower flows allows for more accurate tracking of water use as it occurs.

a. How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

The estimated annual water savings from the project is 215 AFY. The savings calculation is shown in Table 3. This section will identify the studies used as reference in the calculation table.

The annual water savings from the project is estimated to be the volume of water lost through low flow water leaks in single-family homes, less 40% to account for customers who are unresponsive to leak alerts. Although the high-resolution registers will be placed on water meters for all the City's customer types, most research on low flow leak frequency is based on data from single-family homes. Additionally, single-family homes are the City's largest customer class by both number of customers and volume of water consumed.

A 2011 study funded by the California Department of Water Resources (DWR) and titled *California Single Family Water Use Efficiency Study* examined detailed water usage data from a sample of single family home across ten California water agencies. The researchers installed data loggers on the water meters of the study homes and collected water flow data at ten second

intervals. This highly detailed data allowed researchers to identify individual water-use events, including water leaks. Leak data from the study is in Table 2, below.

Table 2 - Leak Frequency from the California Single Family Water Use Efficiency Study

Leak Size (gal/day)	Leak Size (gal/hour)	% of Single Family Homes Leaking at Given Rate
160	6.7	1%
120	5.0	1%
110	4.6	1%
100	4.2	2%
90	3.8	1%
80	3.3	2%
70	2.9	3%
60	2.5	2%
50	2.1	4%
40	1.7	6%
30	1.3	9%
20	0.8	19%
10	0.4	47%

The leak data is applied to the number of single family residential homes in the City to determine the amount of water being lost to low-flow leaks. Leakage volume considered for the purposes of the water savings estimate was limited to leakage volumes from leaks between 1 and 7.5 GPH. Leaks below 1 GPH would likely be difficult for customers to find and may result in over-messaging to customers, decreasing a customer's likelihood of responding to future leak alerts for larger leaks. Leaks of 7.5 GPH and above could be identified and reported by the City's existing 6-dial registers. The purpose of this project is to identify and stop water lost from low- flow leaks; therefore, leaks of 7.5 GPH or more are not considered here.

The total water lost to low flow leaks between 1 GPH and 7.5 GPH is then multiplied by 60% to obtain the final estimated water savings. This adjustment will account for customers who will either not see or ignore leak alerts, or decide not to investigate and repair the leak.

The 60% adjustment factor for customer responsiveness to leak alerts is based on data from a case study conducted by the San Francisco Public Utility Commission (SFPUC). The study was presented by Kevin Galvin and Chris Hewes at the 2018 WaterSmart Innovations Conference and was titled, *"You May Have a Leak!" Automating Leak Alert Notifications*. For the study, SFPUC conducted an AMI Leak Alert Pilot Program from March 2015 to August 2017. SFPUC sent postcards to single-family customers whose water usage profiles indicated they had a leak. The study found that 76% of the leaks were resolved within four weeks of notification via postcard. To be conservative and account for the possibility of different responsiveness rates between

SFPUC and City customers, the City is electing to use an adjustment factor of 60% rather than 76%.

Table 3 - Estimated Project Water Savings

DWR California Single Family Water Use Efficiency Study Data			Single Family Homes in City= 17,000 total	Totals	
Leak Rate (Gal/Hour)	Leak Rate (Gal/Day)	% of Homes Leaking at Given Rate	# of Single Family Homes Leaking at Given Rate (%*17,000)	Total Leaked (Gal/Day)	Total Leaked (Gal/Year)
6.7	160	1%	170	27,200	9,928,000
5.0	120	1%	170	20,400	7,446,000
4.6	110	1%	170	18,700	6,825,500
4.2	100	2%	340	34,000	12,410,000
3.8	90	1%	170	15,300	5,584,500
3.3	80	2%	340	27,200	9,928,000
2.9	70	3%	510	35,700	13,030,500
2.5	60	2%	340	20,400	7,446,000
2.1	50	4%	680	34,000	12,410,000
1.7	40	6%	1,020	40,800	14,892,000
1.3	30	9%	1,530	45,900	16,753,500
			Grand Totals:		
			Gal/Year		116,654,000
			AFY		358
			AFY if 60% of Leaks Repaired		**215**

Water Lost to Leak of X Gal/Day = Leak rate (gal/day) * % homes leaking at X rate * 17,000 single family homes in City of Santa Barbara*365 days

Sum of Water Lost to All Leaks Between 1.0 and 7.5 GPH = 358 AFY (estimated)

Total Estimated Water Savings = Sum of water lost to leaks between 1 and 7.5 GPH * 60% = 215 AFY (estimated)

The total estimated water leakage in City homes with a leakage rate between 1 and 7.5 GPM is 358 AFY. The City estimates that 60% of these leaks will be resolved. This results in an estimated water savings of 215 AFY.

b. How have current distribution system losses and/or the potential for reductions in water use by individual users been determined?

High-resolution 8-dial registers will enable the City's AMI system to flag and notify customers of low flow leaks (below 7.5 GPH) that would otherwise go unreported with a low-resolution 6-dial register. Therefore, the potential for reductions in water use by individual users was determined by estimating the water lost to low flow leaks in single family homes within the City's water service area. That number was then adjusted down to account for customers who would not be responsive to leak alerts and fail to resolve the low flow leak on their property.

The formulas used to calculate the savings are reproduced below. Please also see Table 3 above.

Water Lost to Leak of X Gal/Day = Leak rate (gal/day) * % homes leaking at X rate * 17,000 single family homes*365 days

Total Estimated Water Savings = Sum of water lost to leaks between 1 GPH and 7.5 GPH * 60%

Low flow leakage data was obtained from the DWR California Single Family Water Use Efficiency Study that determined low flow leak frequencies by examining highly detailed water usage data from single family homes in ten California water agencies. A SFPUC leak alert pilot study determined that 76% of leaks are resolved within four weeks of customer notification. The City elected to use an adjustment factor of 60% rather than 76% to be conservative. Total estimated water savings are 215 AFY as outlined in Table 3 above.

c. For installing end-user water service meters, e.g., for a residential or commercial building unit., refer to studies in the region or in the applicant's service area that are relevant to water use patterns and the potential for reducing such use. In the absence of such studies, please explain in detail how expected water use reductions have been estimated and the basis for the estimations.

The City used data from two studies conducted within California to inform the City's estimated water savings calculations. Those studies are:

1. *California Single Family Water Use Efficiency Study. S*ponsored by the California Department of Water Resources; managed by the Irvine Ranch Water District; Prepared by Aquacraft Water Engineering and Management, 2011.
2. *"You May Have a Leak!" Automating Leak Alert Notifications*." Presented by Kevin Galvin, San Francisco Public Utilities Commission, and Chris Hewes, Woodard & Curran at the WaterSmart Innovations Conference in October 2018.

California has a unique history of water conservation and intense drought cycles. It is important to the City to use studies and reports from within the state to ensure the data and results are relevant to the City's service area.

d. Installation of distribution system meters will not receive points under this criterion. Accordingly, these projects must be paired with a complementary project component that will result in water savings in order for the proposal to receive credit for water savings, e.g., pipe installation using upgraded materials, or individual water service meters.

Distribution system meters are not included in this project.

e. What types (manufacturer and model) of devices will be installed and what quantity of each?

Currently, the City has an inventory of about 2,000 Badger HRE 8-dial high-resolution meter registers and approximately 25,500 Badger HRE 6-dial low-resolution meter registers, which were installed before the 8-dial registers were available. The City proposes to have all meters paired with 8-dial high-resolution registers. This would increase both the customers' and the City's ability to detect low flow leaks and address them, and it would create equity among the City's water customers by metering each customer's water at the same resolution.

Table 4 – Device Information

Manufacturer	Model	Quantity
Badger	HR-E LP CA	15,500
Badger	HR-E 25 CA	4,000
Badger	HR-E 35 CA	1,200
Badger	HR-E 55 CA	3,800
Badger	HR-E 120 CA	575
Badger	HR-E 170-2 CA	425
	Total	**25,500**

f. How will actual water savings be verified upon completion of the project?

A major component of the larger AMI system that this proposed project supports is the Customer Engagement Portal (CEP). The CEP is a customer-facing tool that allows customers to engage with their water usage data. It also has a back-end component for City staff to view and analyze individual accounts, flagged leaks, and overall usage trends. The City is currently testing three CEPs as part of its AMI pilot project. Interaction with these CEPs has given the City valuable insight into what features would be useful to City staff in managing water conservation goals and insights on what features are available in different CEPs on the market.

Some of the CEPs on the market have the functionality to run leak reports that show not just active leaks, but resolved leaks and the flow rate of those leaks. The City recently released a request for proposals for the AMI system. As a result of its experience with the pilot program's reporting features, the City specifically noted this feature of reporting on resolved leaks as an important component the proposed CEP should have to be successfully selected by the City.

To verify actual water savings, the City will run regular leak reports and analyze the number of leaks with a flow rate below 7.5 GPH that were flagged and resolved. Based on the flow rate data, staff can estimate water saved in a reporting period from one resolved leak by multiplying the

flow rate of the leak by the amount of time within the reporting period the leak was resolved. Total water savings would be the summation of water saved from all resolved leaks.

E.1.2. Evaluation Criterion B—Water Supply Reliability

Please address how the project will increase water supply reliability. Proposals that will address more significant water supply shortfalls benefitting multiple sectors and multiple water users, will be prioritized. General water supply reliability benefits (e.g., proposals that will increase resiliency to drought) will also be considered. Please provide sufficient explanation of the project benefits and their significance. These benefits may include, but are not limited to, the following:

1. Will the project address a specific water reliability concern? Please address the following:

- ***Explain and provide detail of the specific issue(s) in the area that is impacting water reliability, such as shortages due to drought, increased demand, or reduced deliveries. Will the project directly address a heightened competition for finite water supplies and over-allocation (e.g., population growth)?***

  The project will help address the City's fundamental water reliability concern, which is having sufficient water supplies during extended droughts. Because the City depends heavily on local surface water, water supply reliability is vulnerable to prolonged drought periods. By reducing demand on water supply sources, the project will enable the City to extend the reliability of surface water and reduce reliance on especially vulnerable sources such as groundwater and imported water.

  The City has developed five different water supplies: local surface water from the Santa Ynez River (Lake Cachuma and Gibraltar Reservoir), local groundwater (which includes water that seeps into Mission Tunnel), imported water from the State Water Project (SWP), desalinated seawater, and recycled water. Typically, most of the City's demand is met by local surface water reservoirs, desalination, and recycled water. It is augmented as necessary by local groundwater and State Water.

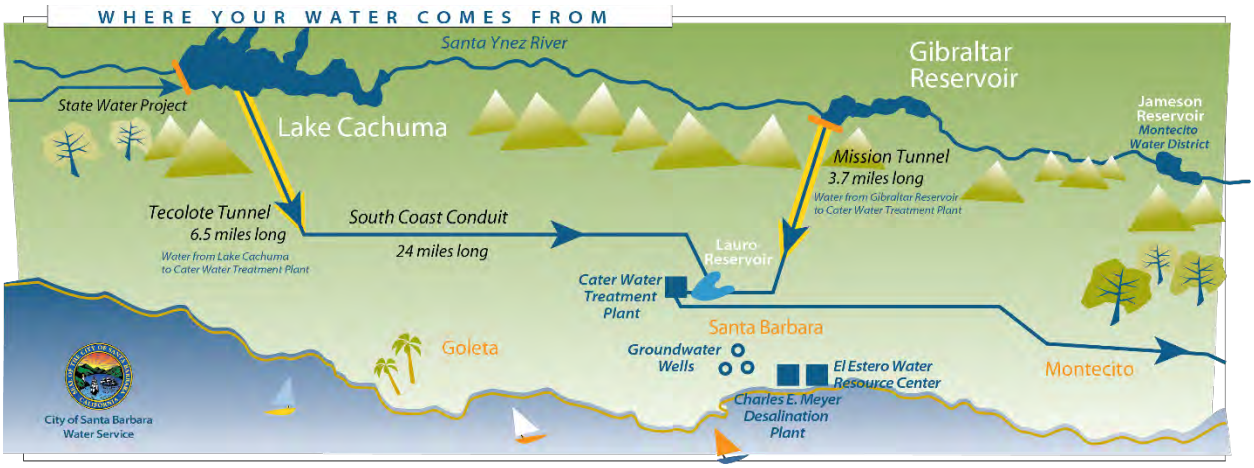


Figure 9 - City of Santa Barbara Water Sources

The critical drought period for the City's water supply occurs when there are multiple consecutive years of below average rainfall. This is due to the particular hydrology of the Santa Ynez River, where little or no inflow to Lake Cachuma occurs until at least average rainfall occurs. When the condition of average or less rainfall continues for multiple years in succession, the storage level of Lake Cachuma drops and shortages in deliveries occur.

The City has a long history of experiencing drought periods and is, as of the writing of this application, still in a Stage One Water Supply Condition due to drought recovery from the most severe drought in Santa Barbara history (2012 – current). The City Council declared Stage One and Stage Two Drought Conditions on February 11, 2014 and May 20, 2014, respectively, as a result of unprecedented drought. On May 5, 2015, in response to the driest consecutive four-year period on record, City Council declared a Stage Three Drought Emergency. In the several years that followed, the Stage Three Drought condition was amended with appropriate conservation targets and water use regulations in response to current and forecasted supply conditions.

The City's 2011 Long Term Water Supply Plan (LTWSP) outlines the City's adopted water supply planning policies for managing droughts. The LTWSP planned for a 10-15 percent demand reduction during drought conditions. However, the recent historic drought resulted in drier conditions for a longer duration than previous drought periods on record. As a result, the City required demand reductions that ranged from 20 percent to 40 percent based on local water supply conditions. In accordance with the LTWSP, depleted surface water supplies were replaced with increased groundwater production, purchases of supplemental imported water, the reactivation of the Charles E. Meyer Desalination Plant in the spring of 2017, and extraordinary water conservation from the community.

On April 9, 2019, following a winter of above-average rainfall, City Council reduced the drought stage to a Stage One Water Supply Condition. The most recent U.S. Drought Monitor shows much of Southern California, including Santa Barbara County, is no longer

experiencing drought conditions. While the immediate climate conditions have improved, the cumulative effect of the eight-year drought on the City's water supplies has been extreme, and it will take several years for groundwater supplies to fully recover. In addition, the City currently has water debt it must pay back as a result of supplemental imported water purchases made during the drought.

- ***Describe how the project will address the water reliability concern? In your response, please address where the conserved water will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.***

  The conserved water from the project will reduce the City's dependence on its current water sources, especially the sources that are relied on during drought: groundwater and SWP water.

  <u>Offset groundwater pumping:</u> Groundwater is an important component of the City's water supply portfolio, especially in times of drought when surface water supplies are diminished. The City conjunctively uses its groundwater resources by pumping them in times of drought, and resting and replenishing them during "normal" water years.

  The City's groundwater basins are relatively small, but groundwater plays an important role in meeting demand during drought and emergency periods. Located on the southern side of the Santa Ynez Mountains, groundwater and desalination are the City's only existing potable water supplies that are truly local. This is important in case of a potential catastrophic interruption of the tunnels that carry surface water supplies through the Santa Ynez Mountains, such as in a seismic event.

  There are two main groundwater basins the City relies on for water supply: Foothill Basin and Santa Barbara Basin. For decades, the City has been working with the United States Geological Survey to monitor water levels and water quality of the groundwater basins and develop a detailed model to estimate the sustainable groundwater yield for use in the City's water supply planning. The City has also adopted local ordinances regarding private groundwater wells in order to protect the groundwater resource.

  Conservation measures, such as those that will be realized through implementation of the meter register upgrade project, will help the City better manage its groundwater basins and conserve its groundwater resources by offsetting pumping in dry years.

Address reduced deliveries: The measurable water savings derived from the Project will also reduce the City's dependence on water imported through the SWP and improve the City's resilience to the impacts of a local or statewide drought. The Project will make more water available for in-stream flows for the sources of the Sacramento-San Joaquin Delta (Delta).

The SWP water comes from the Delta which is a large estuary that provides habitat for many bird and fish species at the confluence of the Sacramento and San Joaquin Rivers. SWP water is delivered to Santa Barbara County through the Coastal Branch of the aqueduct system and released into Lake Cachuma. The availability of annual SWP allocations for the City is dependent on the amount of precipitation (snow pack and rainfall) in the Feather River watershed and the available water in Oroville Reservoir.

By reducing the City's demand, the conserved water will remain in the Delta and river systems which will help maintain in-stream flows and overall ecosystem health. The project will provide more water to the natural environment and to species reliant on water from these sources.

- ***Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.***
  There is no engineered mechanism necessary; the water conserved by the project will be used to reduce groundwater pumping and reduce the need to import water from the SWP, especially in times of drought.

- ***Indicate the quantity of conserved water that will be used for the intended purpose.***
  The anticipated project water savings is 215 AFY.

2. Will the project make water available to achieve multiple benefits or to benefit multiple water users? Consider the following:

- ***Will the project benefit multiple sectors and/or users (e.g., agriculture, municipal and industrial, environmental, recreation, or others)?***
  The project will result in all City water customers having access to higher resolution water use data and detection of low flow leaks. Customer classifications include residential, multi-family, commercial, industrial, agriculture, irrigation, and recreation; therefore, the project will benefit all sectors and users.

  Additionally, the project will make more water available for in-stream flows for the sources of the Sacramento-San Joaquin Delta. By reducing demand on source supplies, the conserved water will remain in the river system which will help maintain in-stream

flows and overall ecosystem health. The project will provide more water to the natural environment and to species reliant on water from these sources.

Recreation opportunities in the Delta region are extensive and include fishing, hunting, boating, camping, picnics, bird watching, and more. Incrementally increased available water supply, resulting from the project, could have a net positive affect on the area's recreational opportunities and the area's recreation based economy.

- ***Will the project benefit species (e.g., federally threatened or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project.***
  The project is anticipated to generally reduce the City's dependency on water from the SWP that is sourced from the Delta. The Delta provides habitat for more than 500 species of fish and wildlife. The 2013 Bay Delta Conservation Plan identified over 30 non-listed species potentially impacted by withdrawals from that system through the SWP. Impacts from withdrawals occur due to the change of river flow by pumping, capture within pumping equipment, and increased saltwater intrusion due to pumping. A decrease in water imported through the SWP could help to alleviate these pressures on the Delta ecosystem and could help restore habitat for non-listed species. These species are not impacted by a Reclamation project.

- ***Will the project benefit a larger initiative to address water reliability?***
  The proposed project is Phase III of the City's implementation of a City-wide AMI system. AMI is the technology of automatically collecting water usage data from water meters and transferring the data over a secure network to a central database. The collected data is used for identifying leaks, analyzing trends, billing customers, and providing customers with current information about their consumption use patterns. This timely information, coupled with analysis, can help both the water utility and its customers more efficiently use water supplies and identify leaks early to improve system reliability.

  Phase I of the AMI project, which started in 2014, focused on replacing existing water meters with AMI-compatible meters, researching available technologies, piloting two AMI solutions on a cross-section of customer classes, and evaluating potential customer engagement portals.

  Phase II of the AMI project covers the procurement and deployment of AMI endpoints to all of the City's approximately 27,500 meters, as well as implementation of meter data management and customer portal systems. A Request for Proposals for Phase II

implementation was released on September 3, 2020, and staff anticipates awarding a contract in the next several months.

In Phase III (the current proposed project for this application), the City is proposing to upgrade the existing meter register dials from 6-dials to 8-dials, which would enable the City's meters to transmit data on smaller volumes of water through the AMI network. By improving the resolution of the water use data, customers will be able to address smaller leaks and inefficient water uses, and further reduce their water bills. As a result, the Project will be valuable in meeting the greater water management goals of the City, local region, and State. The project would also create equity among the City's water customers by metering each customer's water at the same resolution.

AMI is a proven water conservation tool. By providing customers with high-resolution information about their daily water consumption and use patterns, they can better manage their water use, and are more likely to conserve water. Additionally, AMI data can help staff better understand use patterns in the water system and optimize their approach to operations, maintenance, and customer service.

- ***Will the project benefit Indian tribes?***
  The project is not anticipated to specifically benefit Indian tribes, but it will benefit individual tribe members who happen to be City water customers.

- ***Will the project benefit rural or economically disadvantaged communities?***
  The City's water service area is not encompassed within designated Disadvantaged Communities (DACs). However, there are multiple census blocks within the City's service area which qualify as economically disadvantaged, as shown on Attachment 2, Bureau of Reclamation DAC Mapping Tool. Early detection of private property water leaks will have greater impact on economically disadvantaged community members by helping reduce high water bill costs resulting from those leaks.

- ***Describe how the project will help to achieve these multiple benefits. In your response, please address where the conserved water will go and where it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.***
  The proposed project will result in the conserved water remaining in the City's groundwater basins, allowing a more sustainable local supply and a decreased dependence on imported water from the SWP, especially during extended droughts.

3. Does the project promote and encourage collaboration among parties in a way that helps increase the reliability of the water supply?

- ***Is there widespread support for the project?***
  The City greatly values collaboration with, and involvement from, the public and other interested parties and stakeholders. The City has a total of 32 Advisory Boards, Commissions, and Committees that allow members of the public and others to interact with City staff and City Council in a meaningful way and get involved on a wide variety of subjects encompassing most City functions. The net positive result of this comprehensive effort to collaborate with the public via Boards, Commissions, and Committees, is a greater level of governmental transparency and broader community support for key City programs and projects.

  The project has garnered support from the City's water customers, Water Commission, the City of Santa Maria (a regional partner in water supply planning), elected officials and representatives. At multiple points in time, the Water Commission and City Council have recommended to approve actions that appropriate funds to the proposed project and other phases of the larger AMI project and authorize staff to enter into professional service agreements to move the project forward. The following stakeholders formally recognized the water supply reliability benefits of this project and provided letters of support:

  - U.S. Congressman Salud Carbajal
    360 S. Hope Ave, Suite C-301
    Santa Barbara, CA 93105
    Phone: (805) 730-1710

  - U.S. Senator Dianne Feinstein
    11111 Santa Monica Blvd, Suite 915
    Los Angeles, CA 90025
    Phone: (310) 914-7300

  - Ron Radelet
    City water customer, AMI pilot participant
    ron@radelet.us
    Phone: (714) 321-8897

  - Paul Leonardi
    University of California Santa Barbara
    DUCA Family Professor of Technology Management
    Leonardi@tmp.ucsb.edu
    Phone: (805) 893-5414

- State Senator Hannah-Beth Jackson
  222 E. Carrillo Street, Suite 309
  Santa Barbara, CA 93101
  Phone: (805) 965-0862

See Attachment 3 for Letters of Support. There are no organizations, groups, or individuals known to oppose the project as of the submission of this grant funding application.

- ***What is the significance of the collaboration/support?***
  The project (and the larger AMI project) will serve as a model for detecting and notifying customers of small and persistent private property water leaks. The City is part of the Regional Water Efficiency Program, a collaborative group of 12 water providers and the County Water Agency, dedicated to promoting water conservation countywide. It is the expectation that the City will be able to share the water saving data with neighboring water providers regarding the benefits of upgrading meter registers to a higher resolution.

  This collaboration and sharing of successes will support the adoption of higher resolution meters and the associated Advanced Metering Infrastructure technology. Regional water savings from adopting this technology will result in more water conserved and less reliance on imported water throughout the region. There is a high level of sharing and collaboration and cooperation among water agencies throughout Santa Barbara County through multiple programs, including the Santa Barbara County Integrated Regional Water Management Program and sub-regional coordination efforts among South Coast water agencies.

- ***Is the possibility of future water conservation improvements by other water users enhanced by completion of this project?***
  Several water providers in our region are currently deploying AMI systems. This will lead to further collaboration on water use trends, water loss programs, targeted water efficiency measures, etc., on a regional level. This is especially relevant as it pertains to increased customer engagement and understanding of water use and leaks on a regional level.

- ***Will the project help to prevent a water-related crisis or conflict? Is there frequently tension or litigation over water in the basin?***
  The current drought has shown that shared regional resources such as the State Water Project and Lake Cachuma supplies are stretched when supply is limited, and there is a need to improve regional water supply reliability.

The fundamental challenge for both the City's and other South Coast water agencies' water supply is uncertain rainfall and extended drought. Past droughts have presented significant engineering and community based challenges for the City, the region, and its citizens. It might be considered unfair to deem these drought circumstance as a true "water-crisis" because water agency staff throughout the region and the greater community responded effectively to mitigate the worst case intolerable impacts. However, during these periods, the drought was of the high importance for City leaders, the community, and the region.

The project, with the highresolution water usage data, is anticipated to reduce water loss associated with private property leaks and improve customer understanding of water use habits. By achieving these goals, the project will help mitigate the impact of future droughts and other water shortage related issues.

- ***Describe the roles of any partners in the process. Please attach any relevant supporting documents.***
  The Project, as encompassed by this Grant funding application, is an independent undertaking by the City of Santa Barbara without external partnerships

4. Will the project address water supply reliability in other ways not described above?
The City is unaware of additional project benefits with respect to water supply reliability.

E.1.3. Evaluation Criterion C—Implementing Hydropower

Not applicable.

E.1.4. Evaluation Criterion D—Complementing On-Farm Irrigation Improvements

Not applicable.

E.1.5. Evaluation Criterion E— Department of the Interior and Bureau of Reclamation Priorities

The following demonstrates that the City's project supports the priorities of the Department of the Interior and the Bureau of Reclamation; only the priorities applicable to the project have been addressed.

Department of the Interior Priorities
1. Creating a conservation stewardship legacy second only to Teddy Roosevelt
The City of Santa Barbara is a long-term leader in water conservation and has been successful in reducing the use of potable water supplies, achieving compliance with state and federal conservation requirements, and creating a water efficiency ethic in the Santa Barbara community. The City's commitment to water conservation has been evidenced by reductions in

water demands achieved over the past 30 years and, as of the writing of this application, the City's community water use has decreased to the same level that it was in the 1950s, despite the population more than doubling since that time.

The City's Water Conservation Program began as a response to drought in the late 1970s, and was later expanded in response to the 1987- 1991 drought. In 1992, the City joined the California Urban Water Conservation Council, now the California Water Efficiency Partnership, by signing the Memorandum of Understanding Regarding Urban Water Conservation. Since that time, the City has been actively implementing the Best Management Practices (BMPs), as well as additional water conservation measures. Additionally, implementing the BMPs satisfies contractual requirements with the Bureau of Reclamation for the Cachuma Reservoir Project.

The City's current Water Conservation Program is operated to minimize the use of potable water supplies, meet the requirements of the BMPs, and achieve compliance with California Senate Bill X7-7 per capita water use reduction requirements. Water conservation measures are evaluated for cost effectiveness based on the avoided cost of additional water supplies.

The City's commitment to the proposed project to upgrade 6-dial meter registers with 8-dial registers shows its dedication to ongoing technologically-based improvements to the conservation program. The City believes that implementation of the project in support of the larger AMI project is an important part of sustainable water conservation stewardship. Empowering water customers with the data and tools to be alerted to low-flow leaks and better understand how their daily habits impact water use will lead to greater understanding and mindset that water is a limited resource.

1.a. Utilize science to identify best practices to manage land and water resources and adapt to changes in the environment;

The City's ongoing efforts to implement improved metering technology is an excellent example of using scientific advancements in communications and data acquisition to better manage the City's most complex and expensive natural resource challenge - safe drinking water. The proposed project is a best practice for improved leak detection. The City will continue to use the best available science along with the expertise of City staff to manage the City's water resources and adapt to changes in the environment, including drought conditions currently impacting our water supply.

3.b. Expand the lines of communication with governors, state natural resource offices, Fish and Wildlife offices, water authorities, county commissioners, tribes, and local communities.

The proposed project will strengthen the trust and working collaborative relationship that already exists between the City, its water customers, and other local communities. The City of Santa Barbara Public Works Department vision statement is "a unified department that coordinates and collaborates effectively and earns the trust and high regard of our community."

Upgrading meter registers to high-resolution meter registers is certainly an important project in earning the trust and high regard of our community members and empowering them to better understand and control their water usage and detect leaks.

The City currently has a free Water Checkup program in which City staff meet with property owners or residents to show them how to read the meter, look for leaks, and evaluate water use inside and out. This program will greatly benefit from high-resolution water use data available to both the customer and City staff in identifying water use patterns, common causes for high bills, and low-flow leaks. This will expand the lines of communications between the City and the local community and build trust in accurate metering.

Bureau of Reclamation Priorities

3. Leverage Science and Technology to Improve Water Supply Reliability to Communities

The proposed project leverages the greater AMI technology to significantly improve the resolution of data that is acquired through the AMI system for customers and the City. Customers will directly benefit from the technology to detect low-flow leaks, thus saving water.

Besides low flow leak detection, higher resolution hourly data is important for customer education about water use and builds confidence and trust in the AMI technology. If a customer is able to see up to 0.075 gallons of water use reflected in the high-resolution AMI data, they will learn more about common small water usages and have an easier time trusting that the AMI technology is providing accurate billing. As plumbing fixtures become progressively more efficient, conveying these lower flows via an AMI network allows for more accurate tracking of water use as it occurs.

The project will improve water supply reliability by reducing the City's dependence on its current water sources, especially the sources that are relied on during drought: groundwater and imported water from the SWP. Conservation measures, such as those that will be realized through implementation of the meter register upgrade project, will help the City better manage its groundwater basins and conserve its groundwater resources by offsetting pumping during dry years. The measurable water savings derived from the Project will also reduce the City's dependence on water imported through the SWP and improve the City's resilience to the impacts of local or statewide droughts. The proposed project will result in the conserved water remaining in the City's groundwater basins, allowing a more sustainable local supply and a decreased dependence on imported water from the SWP.

4. Address Ongoing Drought

The project is anticipated to reduce water loss resulting from private property leaks and improve customer understanding of water use habits by providing them with high-resolution water usage data. By achieving these goals, the project will help mitigate the impact of future droughts and other water shortage related issues.

The City has a long history of prolonged drought periods and is currently in a Stage One Water Supply Condition due to drought recovery from the most severe drought in Santa Barbara history (2012 – current). While the immediate climate conditions have improved, the cumulative effect of the eight-year drought on the City's water supplies has been extreme, and it will take several years for groundwater supplies to recover.

By reducing demand on water supply sources, the project will enable the City to extend the availability of existing surface water, reduce reliance on sources that are reserved for times of drought, such as groundwater and imported water, and improve the City's ability to recharge groundwater with the water that is no longer being lost to leaks.

E.1.6. Evaluation Criterion F—Implementation and Results

E.1.6.1. Subcriterion F.1— Project Planning

(1) Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

The City has a comprehensive Water Conservation Strategic Plan (WCSP) that is planned to be finalized after review by the City Water Commission on September 17, 2020. The draft WCSP can be found as Attachment 4.

(2) Describe how the project conforms to and meets the goals of any applicable planning efforts and identify any aspect of the project that implements a feature of an existing water plan(s).

The proposed project is in support of the larger phased Citywide AMI implementation project that is identified in the WCSP as a cost-effective recommended program measure. The planning process for the WCSP included analyzing conservation measures and programs using the Least Cost Planning Decision Support System Model, developed by Maddaus Water Management. A screening of more than 100 measures was conducted, directed at existing customers and new development. The WCSP includes a cost-effective suite of water conservation measures that will help the City reduce per capita water use and improve resiliency to drought.

Full AMI implementation is a planned measure in the WCSP including meter transmitting units, radio or cellular network, meter data management software, and customer leak notification via online water consumption software.

The WCSP was also developed to support the future intentions of the state of California. In response to statewide drought that began in 2014, the California Legislature established a framework centered on "Making Water Conservation a California Way of Life" to help the state better prepare for droughts and climate change by establishing statewide water efficiency

standards. This state legislation, Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman), mandates water efficiency through urban water use objectives.

The proposed register upgrade project will increase water savings from the AMI system, and lay a foundation for compliance with forthcoming state mandates.

The City has completed Phase I (replacement of 27,500 meters), and is in the process of soliciting proposals for Phase II (AMI Implementation). This grant application project represents Phase III of the City's long term plan to implement a full scale AMI program. The City is committed to the long term success of this program.

E.1.6.2. Subcriterion F.2— Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved or better managed, energy generated or saved). All Water and Energy Efficiency Grants applicants are required to propose a "performance measure" (a method of quantifying the actual benefits of their project once it is completed).

A major component of the AMI system is the Customer Engagement Portal (CEP). The CEP is an online tool accessible to customers that allows them to engage with their water usage data. It also has a back-end component for City staff to view and analyze individual accounts, flagged leaks, and overall usage trends. The City is currently piloting three CEPs as part of its AMI pilot project. Interaction with these CEPs has given the City valuable insight into what features would be useful to City staff in managing water conservation goals and insights on what features are available in different CEPs on the market.

One of the CEPs in the City's pilot program has the functionality to run leak reports that show not just active leaks, but resolved leaks and the flow rates of those leaks. The City recently released a request for proposals (RFP) for the citywide AMI system. As a result of experience with the pilot program's reporting features, the City specifically noted this reporting feature on resolved leaks as an important component for the CEP selected by the City.

The proposed performance measures for this project include:

1. Number of low flow leaks identified
2. Number of leak alerts sent to customers regarding low flow leaks
3. Number of low flow leaks resolved
4. Water saved from resolved low flow leaks

Low flow leaks are considered any leaks with a flow rate of less than 7.5 gallons per hour. Water saved for this performance measure will be calculated by multiplying the flow rate of the leak by the amount of time in the relevant reporting period. For example, if the City were to be reporting on water saved in the quarter, staff would multiply the flow rate of the leak times the number of days in the quarter for which the leak had been resolved.

E.1.6.3. Subcriterion F.3— Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project.

Major tasks for the project include:

1) Environmental and Cultural Compliance Review
2) Procurement of the 8-dial register units
3) Installation of the 8-dial register units

Table 5 – Preliminary Project Schedule

City of Santa Barbara AMI Meter Register Change Project Preliminary Project Schedule	2020				2021												2022												2023							
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug
Reclamation WaterSMART Grant FY2021																																				
Submit City SB Grant Application																																				
Grant Application Review Period																																				
Grant Award Notification																																				
Grant Agreement Negotiation Period																																				
Grant Agreement Notice To Proceed																																				
Register Replacement Project Schedule																																				
Environmental and Cultural Compliance: CEQA & Coastal Exemptions																																				
Procure 8-Digit Registers - 50%																																				
Procure 8-Digit Registers - 100%																																				
Install 8-Digit Registers - 50%																																				
Install 8-Digit Registers - 100%																																				
Register Replacement Project Duration																																				
Project Duration (20-months)																																				
BOR - Grant Completion Requirement (24-months)																																				
Grant Agreement Period to Complete Project																																				

For the Environmental and Cultural Compliance Review task, the City intends to submit for a California Environment Quality Act (CEQA) exemption and a Coastal Exemption for project areas within the coastal zone. The process of obtaining these exemptions would start soon after notification of grant award. The activity would commence on March 1, 2021 and could be completed by June 30, 2021.

Procurement of the 8-dial register units was separated into 50% and 100% completion activity items. The 50% activity would commence around July 1, 2021 and be completed around July 31, 2022. The 100% activity would commence around August 1, 2022 and be completed around February 28, 2023.

Installation of the 8-dial register units was separated into 50% and 100% completion activity items. The 50% activity would commence around September 1, 2021 and be completed around July 31, 2022. The 100% installation activity would commence around August 1, 2022 and be completed around February 28, 2023. See Table 6 below for a summary of project milestones.

Table 6 – Project Milestones

Task	Planned Start Date	Planned Completion Date
Environmental and Cultural Compliance : CEQA & Coastal Exemptions	March 1, 2021	June 30, 2021
Procure 8-Dial Registers - 50%	July 1, 2021	July 31, 2022
Procure 8-Dial Registers - 100%	August 1, 2022	February 28, 2023
Install 8-Dial Registers - 50%	September 1, 2021	July 31, 2022
Install 8-Dial Registers - 100%	August 1, 2022	February 28, 2023

Describe any permits that will be required, along with the process for obtaining such permits.

The City will submit applications for the CEQA Exemption and Coastal Exemption to the City's Community Development Department for review. The Project will involve working in existing water meter boxes. These boxes are easily accessed at ground level. No soil will be disturbed. The boxes are already opened on a monthly basis by City personnel to record meter readings for the purposes of water billing. The Project scope of work has no environmental impacts.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

The proposed 8-dial register units are a direct retrofit item from the meter manufacturer and can be installed without any customizations. The proposed retrofit units have been coordinated and approved by the meter manufacturer as the appropriate higher resolution units for the existing meters. The units will be ordered in batches; each batch will take approximately a month to be delivered after the order is placed.

The proposed retrofit units have also been confirmed to be compatible with the City's ongoing AMI implementation project that would connect and communicate with these registers. The meter information will be conveyed to online data storage services via the AMI communications network.

Describe any new policies or administrative actions required to implement the project.

There will be no new policies or administrative actions required to implement the project.

E.1.7. Evaluation Criterion G— Nexus to Reclamation Project Activities

Is the proposed project connected to Reclamation project activities? Does the applicant receive Reclamation project water?

A major component of the City's water supply portfolio comes from Reclamation facilities. These include Lake Cachuma and Lauro Reservoir. Water in Lake Cachuma travels through Tecolote

Tunnel to Lauro Reservoir, where it is stored until the City treats the water at the City's regional Cater Water Treatment Plant, and then delivers the water to City customers.

Is the project on Reclamation project lands or involving Reclamation facilities?

No. The proposed project is not located on Reclamation project lands.

Is the project in the same basin as a Reclamation project or activity?

No. The proposed project is not located in the same basin as a Reclamation project or activity.

Will the proposed work contribute water to a basin where a Reclamation project is located?

No. The proposed project will not contribute water to a basin where a Reclamation project is located.

Will the project benefit any tribe(s)?
The project is not anticipated to specifically benefit Indian tribes, but it will benefit individual tribe members who happen to be City's water customers.

E.1.8. Evaluation Criterion H— Additional Non-Federal Funding

Provide non-Federal funding in excess of 50 percent of the project costs. State the percentage of non-Federal funding provided using the following calculation:

$$\frac{\text{Non-Federal Funding}}{\text{Total Project Cost}} \quad \frac{\$936,211}{\$1,436,211} = 65\% \text{ City funding percentage}$$

Section 2: Project Budget

Funding Plan and Letters of Commitment

It is the intent of the City to use City Water Resources Division funds to pay for the non-Federal share of project costs. The City funds for this project are available at the time of this application and are committed for use on the proposed project. As such, there are no Letters of Funding Commitment contained herein from other or outside funding sources.

None of the City's noted funds will be used during the application review and award period. The City is planning on executing contracts and initiating purchasing of components after the anticipated grant award or when allowed by Reclamation.

No environmental, cultural compliance, engineering, nor design costs are anticipated to be incurred directly by the City. No costs for preparation of this Grant application will be included in the budget costs. No purchases of water, land, nor easements are expected. There are no third-party nor other funding partners for this project. Note the following Federal Form SF-424C Budget Information in Table 7 below.

Table 7 – Federal Form SF-424C Budget Information

Federal Form SF-242C (BUDGET INFORMATION – CONSTRUCTION PROGRAMS)		
9. Construction (Budget Item a-1)	$	188,305
10. Equipment (Budget Item a-2)	$	1,247,906
16. TOTAL PROJECT COSTS	$	1,436,211

Funding Commitment: The City has allocated funds to cover the $936,211 of project costs noted below. These are existing funds that are currently available and will represent all the non-Federal share of the project funding. Reclamation grant funds are anticipated to pay for $500,000 of the total project cost. This is in compliance with the 50% maximum grant ratio requirement. See Table 8 for specific funding ratios.

Table 8 - Funding Sources Percentages

Funding Source	Funding Source Amount	Percentage
City of Santa Barbara	$ 936,211	65%
Reclamation Grant	$ 500,000	35%
TOTALS	$ 1,436,211	

Budget Proposal

Table 9 – Total Project Costs

SOURCE	AMOUNT
Costs to be reimbursed with requested Federal funding	$ 500,000
Costs to be paid by the applicant	$ 936,211
Value of third party contributions	$ -
TOTAL PROJECT COST	$ 1,436,211

Table 10 - Budget Proposal

BUDGET ITEM DESCRIPTION	COMPUTATION		QTY TYPE	TOTAL COST
	$/UNIT	QTY		
Salaries and Wages				
Operator 1 - AMI Register Change	28.62	3825	hour	$ 109,472
Fringe Benefits				
Operator 1 - AMI Register Change	20.61	3825	hour	$ 78,833
Travel				
Trip 1 - N/A				$ -
Equipment				
AMI Meter Register 8-dial Procurement	$ 48.9375	25,500	each	$ 1,247,906
Supplies and Materials				
Item A - N/A				$ -
Contractual/Construction				
Item A - N/A				$ -
Third-Party Contributions				
Contribution A - N/A				$ -
Other				
TOTAL DIRECT COSTS				$ 1,436,211
Indirect Costs				
Type of rate - N/A				$ -
TOTAL ESTIMATED PROJECT COSTS				$ 1,436,211

Budget Narrative

The following narrative provides a brief explanation for each of the line item cost amounts encompassed in Table 10 – Budget Proposal.

Salaries and Wages

Salary and wage estimates are included for City employees to perform changing the register units. This involves removal of the 6-dial water meter registers and installation of the replacement 8-dial registers. The budgetary cost is based on Water Distribution Operator I personnel performing the work. The City of Santa Barbara pays this level of employee up to $28.62 per hour. The City estimates that replacement of the estimated 25,500 units will take 3,825 hours resulting in an estimated installation cost of $109,472. Note that the City has approximately 27,500 water meters in the system and approximately 2,000 of those already use 8-dial registers.

*$28.62/hr * 3,825hrs = $109,472*

The estimated 3,825 hours to install the units is based on an estimated six minute duration per unit to physically install a unit and a three minute duration per unit to enter replacement register information into the City's billing system. There are an estimated 25,500 units to replace.

*25,500 units * (6 + 3) min/unit * 1 hr/60 min = 3,825 hrs*

Fringe Benefits

Fringe benefit costs are included for City employees to perform the installation of the 8-dial meter register units. The fringe benefit rate used in this calculation is 72%. It was developed by the City in March 2018 to support reimbursement claims submitted to FEMA for damages incurred during the California Wildfires, Flooding, Mudflows, and Debris Flow Disaster (DR-4353). The rate components are shown in Table 11 as follows:

Table 11 – Fringe Benefit Rate Calculation

Fringe Benefit Rate Calculation	
Component	Rate
Holidays	3.85%
Vacation	8.46%
Sick Leave	4.63%
Social Security	0.00%
Medicare	1.45%
Unemployment	0.28%
Worker's Comp	9.06%
Retirement	28.93%
Health Benefits	14.85%
Life Insurance Benefits	0.13%
Other	0.50%
Total (rounded)	72%

The fringe benefit cost for the Water Distribution Operator I employee was determined as follows:

*$28.62/hr * 0.72 = $20.61/hr*

See Salaries and Wages section for additional information on how hours quantity was determined. The fringe benefits cost was determined as follows:

*$20.61/hr * 3,825hrs = $78,833*

See Salaries and Wages section about for an explanation of how 3,825 hrs were determined.

Travel

No City personnel travel cost is anticipated.

Equipment

The City plans to procure the replacement 8-dial register units directly. The City has received a quote from the meter manufacturer for the retrofit 8-dial register units at a cost of $45/unit. The price in the quote is subject to change but is the best available information to estimate equipment costs. City sales tax (8.75%) was then added to the unit cost. An estimated 25,500 units are needed.

*$45/unit * 1.0875 tax = $48.9375/unit*
*$48.9375/unit * 25,500 units = $1,247,906*

Materials and Supplies

The City is not expecting to directly procure any materials nor supplies. Materials are accounted for in the Contractual section below.

Contractual

It is planned that City employees will install the replacement register units. However, the City may opt to have a contractor install the units. This will be dependent on the contractor proposed installation cost and desired timeframe for completing the installation of the units. If a contractor is used for this work, Reclamation will be notified and the appropriate funding agreement modifications will be made.

Third-Party In-Kind Contributions

The Project is not requesting, or anticipating, third party in-kind contributions.

Environmental and Regulatory Compliance Costs

The work is all above ground or in existing valve boxes. The City will be submitting for a California Environmental Quality Act (CEQA) exemption and Coastal exemption. No environmental nor regulatory compliance costs are anticipated.

Other Expenses
No other costs are anticipated for the project.

Indirect Costs
No indirect costs are anticipated for the project.

Section 3: Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The proposed project will have no environmental impacts. The work will take place in existing water meter boxes that are located at ground level. The boxes are already accessed on a monthly basis by City personnel to manually record meter readings for water billing purposes.

Are you aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

No endangered or threatened species will be impacted by the project. All work will occur inside existing meter boxes that are located at ground level.

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

There are multiple designated wetlands and surface waters under CWA jurisdiction within the City's water service area. See Attachment 5, Map of Designated Wetlands & Surface Waters Under CWA. However, the project would not impact these wetlands or surface waters, as the work is only occurring inside existing meter boxes.

When was the water delivery system constructed?

The City's potable water mains were first constructed in approximately 1886, with the largest majority of the installation occurring from the 1940s through the 1970s.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The project will not modify or affect individual features of any irrigation system.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

The project will not modify or affect any buildings, structures, or features. Therefore, cultural resources and/or historical buildings will not be affected as a result of project.

Are there any known archeological sites in the proposed project area?

There are no known archeological sites at the proposed equipment installation sites (i.e. inside meter boxes). The meter retrofit work will occur exclusively within existing customer meter boxes, which are regularly accessed by City staff.

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

No disproportionately high and adverse effects would occur on low income or minority populations in the City's service area. In fact, the program is intended to benefit such disadvantaged customers because of increased leak detection capabilities.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The project will not impact any ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The project will not contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area.

Section 4: Required Permits or Approvals

State whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

The City intends to submit for a California Environmental Quality Act exemption and a Coastal Exemption for areas within the Coastal Zone. The City of Santa Barbara Community Development Department has jurisdiction over these proposed exemptions. City Public Works staff will work with Community Development staff to obtain the proposed exemptions. No other permits nor approvals are anticipated.

Section 5: Letters of Project Support

Letters of support from the following entities are included in Attachment 3:

1. U.S. Congressman Salud Carbajal
   360 S. Hope Ave, Suite C-301
   Santa Barbara, CA 93105
   Phone: (805) 730-1710

2. U.S. Senator Dianne Feinstein
   11111 Santa Monica Blvd, Suite 915
   Los Angeles, CA 90025
   Phone: (310) 914-7300

3. Ron Radelet
   City water customer, AMI pilot participant
   ron@radelet.us
   Phone: (714) 321-8897

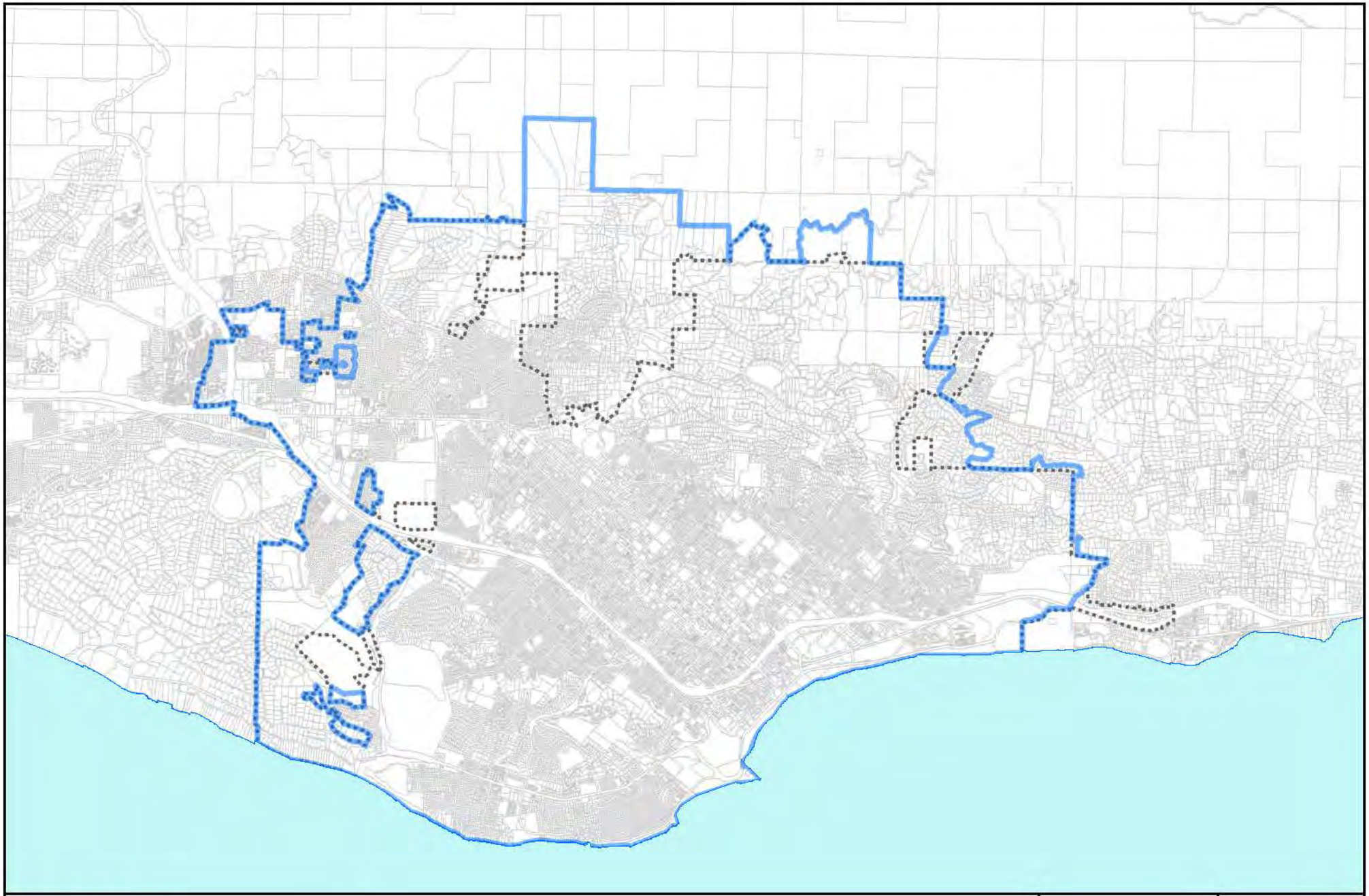
4. Paul Leonardi
   University of California Santa Barbara
   DUCA Family Professor of Technology Management
   Leonardi@tmp.ucsb.edu
   Phone: (805) 893-5414

5. State Senator Hannah-Beth Jackson
   222 E. Carrillo Street, Suite 309
   Santa Barbara, CA 93101
   Phone: (805) 965-0862

Section 6: Official Resolution

The official resolution number 20-066 was adopted by the Santa Barbara City Council on September 15, 2020 and is included as Attachment 6.

Attachment 1: City of Santa Barbara Water Service Boundary



Features shown hereon were compiled from the records of various public and private entities and are for informational purposes only. The City of Santa Barbara does not accept any responsibility for the positional or completeness of this information.

City of Santa Barbara Water Service Boundary

March 24, 2016

Legend

- Water Service Boundary
- Santa Barbara City Limits
- Parcels

N

Attachment 2: Bureau of Reclamation DAC Mapping Tool

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
VICE-CHAIR

SUBCOMMITTEE ON AVIATION

SUBCOMMITTEE ON HIGHWAYS AND TRANSIT

SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT

COMMITTEE ON ARMED SERVICES
SUBCOMMITTEE ON STRATEGIC FORCES

SUBCOMMITTEE ON TACTICAL AIR AND LAND FORCES

COMMITTEE ON AGRICULTURE
SUBCOMMITTEE ON BIOTECHNOLOGY, HORTICULTURE, AND RESEARCH

SUBCOMMITTEE ON LIVESTOCK AND FOREIGN AGRICULTURE

SUBCOMMITTEE ON GENERAL FARM COMMODITIES AND RISK MANAGEMENT

Congress of the United States
House of Representatives
Washington, DC 20515

SALUD O. CARBAJAL
24TH DISTRICT, CALIFORNIA
WEBSITE: CARBAJAL.HOUSE.GOV

1431 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-3601

360 SOUTH HOPE AVENUE, C-301
SANTA BARBARA, CA 93105
(805) 730-1710

1411 MARSH STREET, SUITE 205
SAN LUIS OBISPO, CA 93401
(805) 546-8348

1619 S. THORNBURG STREET
SANTA MARIA, CA 93458
(805) 730-1710

August 27, 2020

Bureau of Reclamation
Financial Assistance Support
ATTN Mr. Ned Weakland
PO Box 25007, MS: 84-27815
Denver, CO 80225

Subject: Support for City of Santa Barbara Advanced Metering Infrastructure (AMI) Project - Phase III: Meter Register Upgrade

Dear Mr. Weakland:

I am writing to express my strong support for the City of Santa Barbara's proposed Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade (Project), and the application for funding under the Bureau of Reclamation's FY-2021 WaterSMART Water and Energy Efficiency Grants Program: BOR-DO-21-F001. The proposed Project will leverage technology to promote water conservation and supply reliability for customers and provide new water demand management tools to the City, within the 24th Congressional District, of which I represent.

The Santa Barbara region is slowly emerging from the worst drought on record, and while water supplies have improved, conservation remains important to fully recover from the cumulative impacts of the drought, and to preserve water supplies for future dry years. Santa Barbara's proposed Project will be an important component in supporting Santa Barbara's robust water conservation program. For years, Santa Barbara has worked diligently to conserve drinking water through the implementation of public outreach and education programs such as disseminating best practices on water wise landscaping, giving educational presentations to local schools, offering rebates for household water efficiency, highlighting the work of local "Water Heroes," and offering free water use assessments for homes and businesses.

Santa Barbara's proposal to upgrade its meter register dials from six digits to eight digits will enable the City's meters to transmit smaller volumes of water, thereby allowing customers to realize the full range of benefits from Advanced Metering Infrastructure, quickly find and repair small but costly leaks, and achieve higher levels of water efficiency. The currently installed six digit dials are limited in their ability to transmit low flows, and as a result, small but persistent leaks are often masked as normal water use in an AMI system. By improving the water use data available to customers, they will be able to address leaks and inefficient water use, and lower their water bills in the process. As a result, the City will realize quantifiable water savings. Finally, the Project will be valuable in meeting the greater water management and conservation goals of the overall region and state by providing tools to better communicate to customers the patterns and impact of their water demand.

For these reasons, once again, I want to express my strong support for the City of Santa Barbara's Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade with regard to full and fair consideration, consistent with all relevant rules and regulations. If you have any questions, please feel free to contact Wendy Motta in my Santa Barbara District Office at (805) 730-1710.

Sincerely,

SALUD CARBAJAL
Member of Congress

DIANNE FEINSTEIN
CALIFORNIA

COMMITTEE ON THE JUDICIARY
—RANKING MEMBER
SELECT COMMITTEE ON
INTELLIGENCE
COMMITTEE ON APPROPRIATIONS
COMMITTEE ON RULES AND
ADMINISTRATION

United States Senate
WASHINGTON, DC 20510–0504
http://feinstein.senate.gov

September 9, 2020

The Honorable Brenda Burman
Commissioner
Bureau of Reclamation
1849 C Street, N.W.
Washington, DC 20240

Dear Commissioner Burman,

I write in support of the City of Santa Barbara's application for funding from the WaterSMART Water and Energy Efficiency Grants Program, administered by the Bureau of Reclamation, U.S. Department of the Interior.

The City of Santa Barbara is requesting funding for its Advanced Metering Infrastructure Project - Phase III: Meter Register Upgrade. The Santa Barbara region is emerging from the worst drought on record, and while water supplies have improved, conservation is critical to the City of Santa Barbara's efforts to fully recover from the drought and to preserve water supplies for future dry years. The proposed Project would advance the City's water conservation program by providing it with new water demand management tools.

If awarded this grant, the City would upgrade its meter register dials from six digits to eight digits. The current dials are limited in their ability to transmit low water flows, and as a result, small but persistent leaks are often masked as normal water use. This upgrade would enable the City's meters to transmit smaller volumes of water, thereby improving the water use data available to customers. The Project would allow customers to identify inefficient water use, repair costly leaks and lower their water bills. It would also promote higher levels of water efficiency and supply reliability in the area. Finally, the Project would result in quantifiable water savings and would support the conservation goals of the region and state.

I urge you to give the City of Santa Barbara's application every consideration. Please keep my office informed of the status of this request, and if I can be of further assistance, please do not hesitate to contact my Los Angeles office at (310) 914-7300.

Sincerely,

Dianne Feinstein
United States Senator

DF/gm

FRESNO OFFICE:
2500 Tulare Street
Suite 4290
Fresno, CA 93721
(559) 485–7430

LOS ANGELES OFFICE:
11111 Santa Monica Boulevard
Suite 915
Los Angeles, CA 90025
(310) 914–7300

SAN DIEGO OFFICE:
750 B Street
Suite 1030
San Diego, CA 92101
(619) 231–9712

SAN FRANCISCO OFFICE:
One Post Street
Suite 2450
San Francisco, CA 94104
(415) 393–0707

Malcolm Hamilton

From: ron radelet <ron@radelet.us>
Sent: Friday, August 21, 2020 3:01 PM
To: Malcolm Hamilton
Subject: FW: Advanced Meter Infrastructure(AMI)

EXTERNAL

-----Original Message-----
From: ron radelet [mailto:ron@radelet.us]
Sent: Thursday, August 20, 2020 3:38 PM
To: 'JShowers@SantaBarbaraCA.gov'
Subject: FW: Advanced Meter Infrastructure(AMI)

Subject: Advanced meter infrastructure(AMI)

Dear Jasmine,
We have been a very satisfied user of your AMI/WaterSmart Program for our Santa Barbara home. This is our vacation home, and even though we are rarely at the home, we are experiencing a very high usage of water...85% landscape irrigation. Since only visiting the home occasionally, your WaterSmart program has been very helpful in identified the days of the week watering occurs, the gallons used, and the time of day the system is irrigating the property. I found this most helpful, but the high usage somewhat alarming!
The High Usage Alert emails to my phone is very helpful determining patterns of usage that may help to reduce our Water consumption. Because of your WaterSmart program, we are working with our gardener discussing options for upgrading some irrigation equipment, and researching ways to reduce our monthly irrigation demand... and high water bills.
I think the proposed upgrade to a 8-digit dial will be very helpful for a more accurate usage reading, and helping detect small water leaks.
We were happy to be selected for your AMI pilot program allowing us to track our daily water usage remotely, and communicate to our gardener in the event any immediate action is required.
Also, we would like to thank Jasmine Showers, Water Resource Specialist, who was instrumental in assisting us In getting "up and running" with the WaterSmart program.
I strongly feel that the AMI Phase-111 meter upgrade Grant is an important project that will benefit not only the utility customer but also The City of Santa Barbara. To the WaterSmart Team...continue the good work.

Best regards,

Mr. and Mrs. Ronald Radelet

Sent from my iPhone

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO

SANTA BARBARA • SANTA CRUZ

PAUL LEONARDI
DUCA FAMILY PROFESSOR OF TECHNOLOGY MANAGEMENT
+1.805.893.5414
Leonardi@tmp.ucsb.edu

TECHNOLOGY MANAGEMENT PROGRAM
1319 PHELPS HALL
SANTA BARBARA, CA 93106-5129
www.leonardi.tmp.ucsb.edu

August 27, 2020

Bureau of Reclamation
Financial Assistance Support
ATTN Mr. Ned Weakland
PO Box 25007, MS: 84-27815
Denver, CO 80225

Subject: Support for City of Santa Barbara Advanced Metering Infrastructure (AMI) Project - Phase III: Meter Register Upgrade

Dear Mr. Weakland:

I am writing to express my support for the City of Santa Barbara's proposed Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade (Project), and the application for funding under the Bureau of Reclamation's FY-2021 WaterSMART Water and Energy Efficiency Grants Program: BOR-DO-21-F001. The project will promote water conservation for customers and provide new water demand management tools to the City.

The Santa Barbara region is slowly emerging from the worst drought on record, and while water supplies have improved, conservation remains important to fully recover from the cumulative impacts of the drought, and to preserve water supplies for future dry years. Santa Barbara's proposed Project will be an important component in supporting Santa Barbara's robust water conservation program. For years, Santa Barbara has worked diligently to conserve drinking water through the implementation of public outreach and education programs such as disseminating best practices on water wise landscaping, giving educational presentations to local schools, offering rebates for household water efficiency, highlighting the work of local "Water Heroes," and offering free water use assessments for homes and businesses.

In my career as a scholar of technology and organizations I have studied new technology implementation in organizational contexts such as automotive engineering, IT service work, pediatric care, medical device production, semi-conductor chip design, banking, telecommunications, and urban planning. My research has helped me to develop skills for studying how complex technologies are folded into complex work environments. Like other major organizational undertakings, I understand the work of drought recovery to be both a social and technical project. This means that with even the most effective social infrastructure in place, as is the case with the excellent conservation programming at the City of Santa Barbara, technological upgrades must also be accomplished. After observing and working closely with the City of Santa Barbara to understand and advise them on their use of technology to assist in drought recovery, I can say with confidence

that the enhanced granularity made possible by upgrade from 6 to 8 dials will enable them to achieve much deeper water savings than is possible now. The register upgrade will enable the City to observe, respond to, and resolve a much broader set of leaks than is technically possible with their current 6-digit paradigm. This is a necessary to improving water supply reliability overall, as with savings comes reduced demand on our drought-prone regional water system.

Santa Barbara's proposal to upgrade its meter register dials from six digits to eight digits will enable the City's meters to transmit smaller volumes of water, thereby allowing customers to realize the full range of benefits from Advanced Metering Infrastructure, quickly find and repair small but costly leaks, and achieve higher levels of water efficiency. The currently installed six digit dials are limited in their ability to transmit low flows, and as a result, small but persistent leaks are often masked as normal water use in an AMI system. By improving the water use data available to customers, they will be able to address leaks and inefficient use, and lower their water bills in the process. Finally, the Project will be valuable in meeting the greater water management and conservation goals of the overall region and state by providing tools to better communicate to customers the patterns and impact of their water demand.

Thank you for the opportunity to express my support for the City of Santa Barbara's Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade. I strongly urge your thoughtful consideration of the Project.

Sincerely,

Paul Leonardi
Duca Family Professor of Technology Management
University of California, Santa Barbara

CAPITOL OFFICE
STATE CAPITOL, ROOM 2032
SACRAMENTO, CA 95814
TEL 916-651-4019
FAX 916-651-4919

SANTA BARBARA COUNTY OFFICE
222 E. CARRILLO STREET
SUITE 309
SANTA BARBARA, CA 93101
TEL 805-965-0862
FAX 805-965-0701

VENTURA COUNTY OFFICE
300 E. ESPLANADE DRIVE
SUITE 430
OXNARD, CA 93036
TEL 805-988-1940
FAX 805-988-1945

California State Legislature

SENATOR HANNAH-BETH JACKSON

NINETEENTH SENATE DISTRICT

CHAIR
SENATE JUDICIARY
SELECT COMMITTEE ON WOMEN, WORK & FAMILIES

VICE CHAIR
JOINT LEGISLATIVE COMMITTEE ON EMERGENCY MANAGEMENT

COMMITTEES
HUMAN SERVICES
LABOR, PUBLIC EMPLOYMENT & RETIREMENT
NATURAL RESOURCES & WATER
PUBLIC SAFETY
SELECT COMMITTEE ON CALIFORNIA'S WINE INDUSTRY

September 14, 2020

Bureau of Reclamation
Financial Assistance Support
ATTN Mr. Ned Weakland
PO Box 25007, MS: 84-27815
Denver, CO 80225

Subject: Support for City of Santa Barbara Advanced Metering Infrastructure (AMI) Project - Phase III: Meter Register Upgrade

Dear Mr. Weakland:

As the State Senator representing the 19th Senate District, which includes the City of Santa Barbara, I am writing to express my support for the City of Santa Barbara's proposed Advanced Metering Infrastructure (AMI) Project Phase III: Meter Register Upgrade (Project), and the application for funding under the Bureau of Reclamation's FY-2021 WaterSMART Water and Energy Efficiency Grants Program: BOR-DO-21-F001. The proposed Project will leverage technology to promote water conservation and supply reliability for customers, and provide new water demand management tools to the City.

The Santa Barbara region is slowly emerging from its worst drought on record, and while water supplies have improved, conservation remains important to fully recover from the cumulative impacts of the drought, and to preserve water supplies for future dry years. Santa Barbara's proposed Project will be an important component in supporting Santa Barbara's robust water conservation program. For years, Santa Barbara has worked diligently to conserve drinking water through the implementation of public outreach and education programs such as disseminating best practices on water-wise landscaping, giving educational presentations to local schools, offering rebates for household water efficiency, highlighting the work of local "Water Heroes," and offering free water use assessments for homes and businesses.

Santa Barbara's proposal to upgrade its meter register dials from six digits to eight digits will enable the City's meters to transmit smaller volumes of water, thereby allowing customers to

realize the full range of benefits from Advanced Metering Infrastructure, quickly find and repair small but costly leaks, and achieve higher levels of water efficiency. The currently installed six digit dials are limited in their ability to transmit low flows, and as a result, small but persistent leaks are often masked as normal water use in an AMI system. By improving the water use data available to customers, they will be able to address leaks and inefficient water use, and lower their water bills in the process. With this project, the City will realize quantifiable water savings. Finally, the Project will be valuable in meeting the greater water management and conservation goals of the overall region and state by providing tools to better communicate to customers the patterns and impact of their water demand.

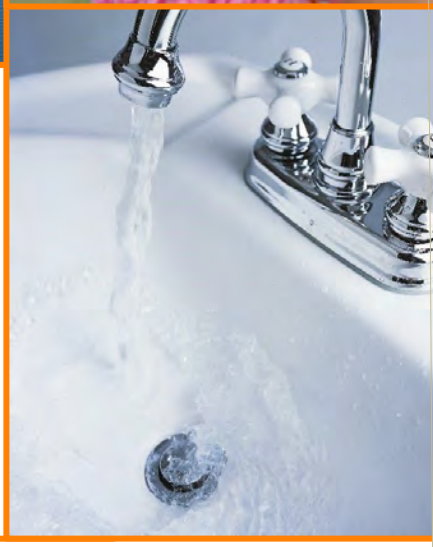
Thank you for your consideration of the City of Santa Barbara's Advanced Metering Infrastructure Project - Phase III: Meter Register Upgrade. I respectfully urge your support for this important Project.

If you have any questions regarding my support for this project, please feel free to contact me or my District Director James Joyce at (805) 965-0862.

Sincerely,

Hannah-Beth Jackson

Hannah-Beth Jackson
State Senator, 19th District



City of Santa Barbara

Water Conservation Strategic Plan

Making Conservation a Santa Barbara Way of Life

DRAFT

August 26, 2020

Prepared by: MADDAUS WATER MANAGEMENT INC.

TABLE OF CONTENTS PAGE

LIST OF ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
acct	account
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
BMP	Best Management Practice
CalWEP	California Water Efficiency Partnership
CEC	California Energy Commission
COM	commercial
CI	Commercial Institutional
CI_IRR	Commercial Institutional Irrigation
CII	Commercial, Industrial, and Institutional
CUWCC	California Urban Water Conservation Council
DSS	Least Cost Planning Decision Support System Model
DWR	California Department of Water Resources
EO	Executive Order
ETo	Evapotranspiration
FY	fiscal year
GPCD	gallons per capita per day
gpd	gallons per day
gpf	gallons per flush
gpm	gallons per minute
HECW	high efficiency clothes washer
HET	high efficiency toilet
HEU	high efficiency urinal
ILI	Infrastructure Leakage Index
INS	institutional
LOD	Lodging
LOD_IRR	Lodging Irrigation
LTWSP	Long Term Water Supply Plan
MF	multifamily
MOU	Memorandum of Understanding
MUR	Multi-Unit Residential
MUR_IRR	Multi-Unit Residential Irrigation
MWELO	Model Water Efficient Landscape Ordinance
MWM	Maddaus Water Management
N/A	not applicable
NO-DES	Neutral Output Discharge Elimination System
OTH	Other
P^3	Paradise Performance Program
Plan	Water Conservation Strategic Plan
ppl	people
psi	pounds per square inch
REUWS	Residential End Uses of Water Study
RWEP	Regional Water Efficiency Program
SB	Senate Bill
SB X7-7	Water Conservation Act of 2009
SF	Single Family
SFR	Single Family Residential
SWRCB	State Water Resources Control Board
ULFT	ultra-low flush toilet
UWMP	Urban Water Management Plan
WUE	Water Use Efficiency

EXECUTIVE SUMMARY

The City of Santa Barbara (City) Water Conservation Strategic Plan (Plan) will enable the City to project long range demands, identify attainable conservation goals, develop strategies, and raise awareness through the identification and prioritization of conservation measures. The Plan includes a cost-effective suite of water conservation measures[1] that will help the City meet future water needs. By combining new initiatives with existing programs as part of a comprehensive strategy for sustainable management of water supplies, the City's conservation activities proposed within this Plan (Figure ES-1) are expected to save an estimated 2,615 acre-feet per year of water in 2050.

Beginning in 2019, a conservation technical analysis was conducted by Maddaus Water Management Inc. (MWM). The purpose of the analysis, and foundation of this Plan, was four-fold:

1. Incorporate current, historical, and projected population growth and new commercial growth rates to project future water demands.
2. Using a set of applicable criteria, evaluate current conservation measures and identify new ones that will reduce future water demand.
3. Quantify the costs and water savings of these measures.
4. Combine the measures into increasingly aggressive programs then evaluate the costs and water savings of these programs.

The planning process included analyzing conservation measures and programs using the Least Cost Planning Decision Support System Model (DSS Model), developed by Maddaus Water Management (MWM). A screening of more than 100 measures was conducted, directed at existing customers and new development. All measures are listed in Figure ES-1 and described in more detail in Appendix E.

This Plan was also developed to support the future intentions of the state of California. In response to another statewide drought that began in 2014, the California Legislature established a framework centered on "Making Water Conservation a California Way of Life" to help the state better prepare for droughts and climate change by establishing statewide water efficiency standards. This state legislation, Senate Bill (SB) 606 (Hertzberg) and Assembly Bill (AB) 1668 (Friedman), along with any future regulations currently under development, will have profound effects on water providers over the coming years.

[1] Though "demand management measure" is not a term used in this report, it may be relevant to readers who are more familiar with the term to understand that it is essentially the same as the term "water conservation measure." In this report, "demand management" and "water conservation" are used interchangeably.

Figure ES-1. City of Santa Barbara Selected Measures for Evaluation

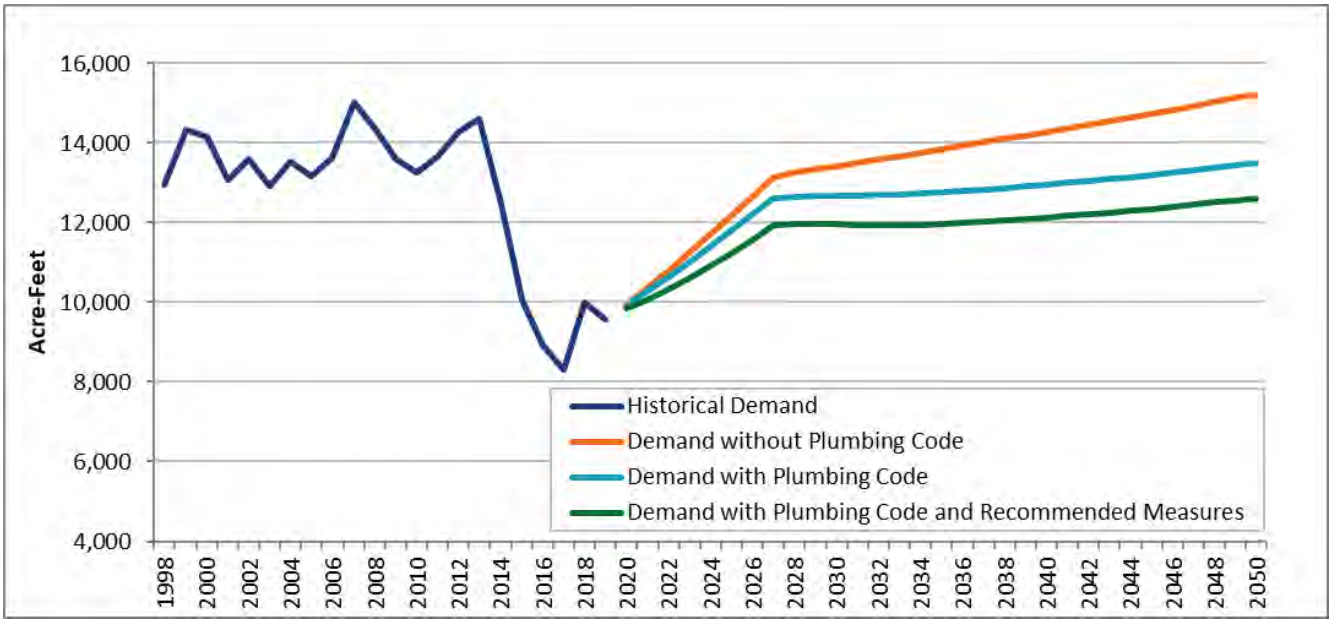
The benefits of the recommended program measures in the Plan include:

- Alignment with the City Public Works Department's mission to provide residents with the sustainable foundation to thrive by delivering quality services and public infrastructure through efficient and fiscally responsible practices;
- Alignment with the One Water Santa Barbara guiding principle to improve local water supply reliability by diversifying our supply portfolio and using water efficiently;

- Expansion of existing efforts to meet state-mandated targets and aggregate water use objectives; and
- A long-term plan that models a cost-effective means to manage water supplies.

The following figure presents historical and projected water use for the City in acre-feet per year (AFY). Plumbing code elements include current local, state, and federal standards for retrofits of items such as toilets, showerheads, faucets, and pre-rinse spray valves. At this time, the plumbing code included in this analysis is conservative and only includes the currently adopted legislation. Based on recent history in the U.S. and California, as well as a continual movement toward more efficient devices, it is likely that more codes and efficient practices will be adopted in the future. If more standards are approved, they could yield additional water savings.

Figure ES-2. City of Santa Barbara Historical and Projected Demand with Plumbing Code and Recommended Measures

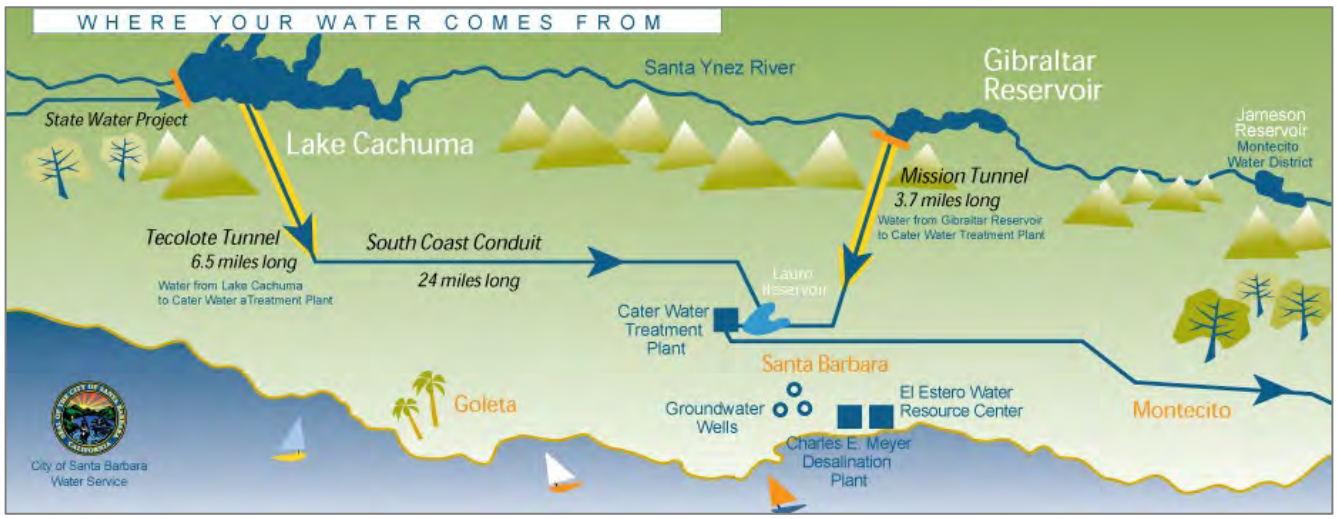


1 INTRODUCTION

1.1 Overview of City of Santa Barbara Water System

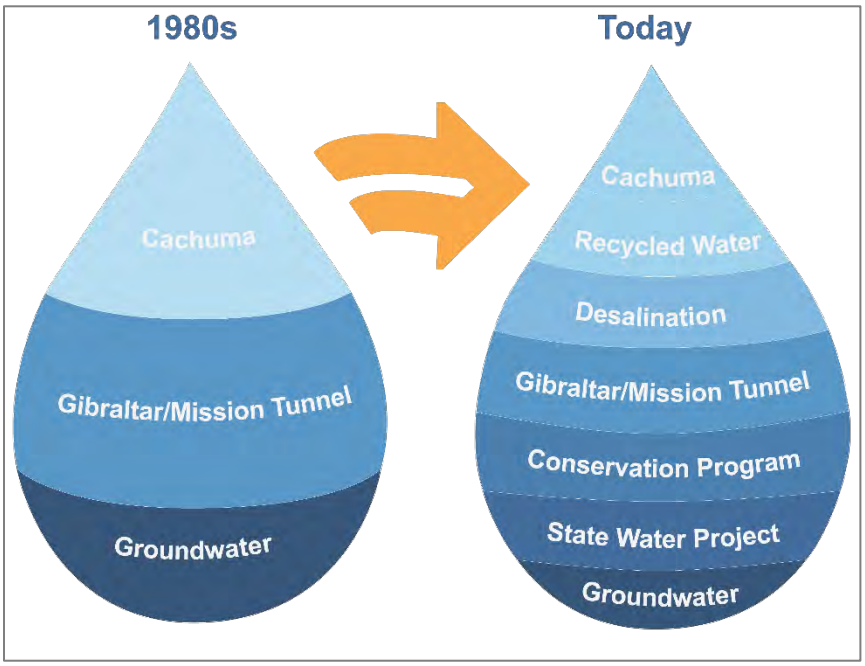
Santa Barbara has a semi-arid climate, so providing an adequate water supply requires careful management of water resources. The City has a diverse water supply including local reservoirs (Lake Cachuma and Gibraltar Reservoir), groundwater, State Water, desalinated water, infiltration water from a conveyance tunnel, and recycled water, as illustrated in the figures below.

Figure 1-1. City of Santa Barbara Water Sources



Conservation has been a long-term priority for the City and is considered a water source. A supply assessment is conducted annually by the City in which the water saved through conservation is regarded as equal to other water supply options. When the City conducts supply and demand forecasting analyses, the estimated water made available through conservation is a part of the supply portfolio.

Figure 1-2. Changes in the City's Water Sources – 1980s to Today

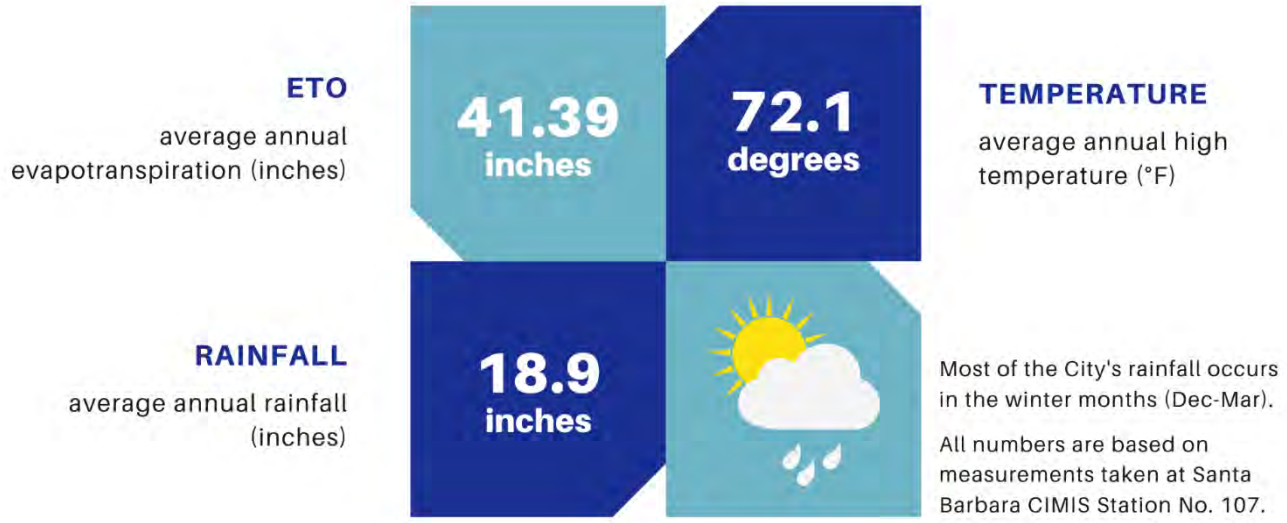


The City has recorded measurements of water sources and production since 1920 and has metered all service connections since 1973 (SBMC §14.08.010)[2]; as of fiscal year 2020, there are 27,677 service connections. The City uses a non-promotional water rate that provides incentive for customers to reduce water use. The City bills customers monthly based on metered use, with the units of consumption clearly indicated.

[2] City of Santa Barbara. Municipal Code, SBMC §14.08.010, accessed August 2020: http://qcode.us/codes/santabarbara/?view=desktop&topic=14-14_20-14_08_010

1.1.1 Climate

The City is located on the central coast of California between the Santa Ynez Mountains and the Pacific Ocean. It offers year-round sunshine with its temperate Mediterranean-style climate of cool, wet winters and mild, dry summers. Temperatures only rarely fall below freezing in winter. During the late summer and early fall period, hot, dry sundowner winds can create high water demands.



1.1.2 Demographics

Santa Barbara is the second-most populous city in the county with an estimated population of 95,279. The City proper has a population density of 2,100 people per square mile (810/square kilometer).

The City has a mix of housing types, including single family residences and multi-unit residences. The City is largely built-out, though it should be assumed that infill and redevelopment will continue at roughly the same rate as in the recent past, resulting in a small increase in population.

Santa Barbara is a popular vacation destination, and tourism is an important part of the local economy. In addition, many people commute from locations throughout the county or adjacent counties to work in Santa Barbara. It is estimated that there are more than 52,000 jobs in the service area[3]. It should be acknowledged that population from tourism and commuters is not factored into the estimated population numbers. However, water use from tourism is accounted for under the non-residential customer categories in the DSS Model.

1.2 Project Background

The City of Santa Barbara has been a long-term leader in water conservation. The City's Water Conservation Program has been successful in reducing the use of potable water supplies, achieving compliance with state and federal conservation requirements, and creating a water efficiency ethic in the Santa Barbara community. The City's commitment to water conservation has been evidenced by reductions in water demands achieved over the past 30 years. As of the writing of this Water Conservation Strategic Plan, community water use has decreased to the same level it was in the 1950s, despite population more than doubling since that time.

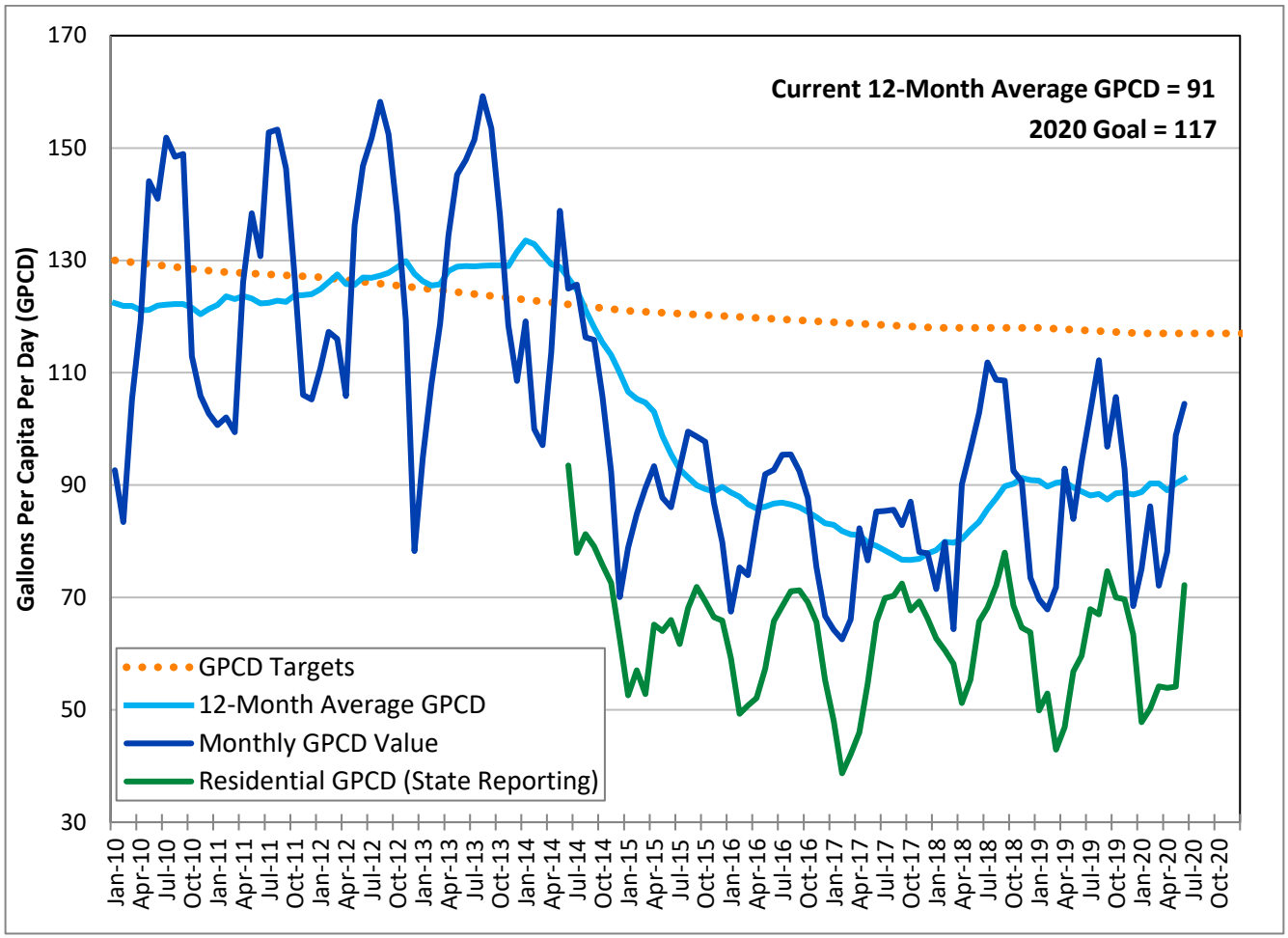
Water use efficiency in the City is supported by coordinating initiatives to achieve a holistic approach to providing the water system and each customer within the service area with the tools needed to conserve water. Recently, a shift in the challenges and drivers for urban water conservation has occurred due to the recent drought, statewide water supply conditions, and the need to comply with forthcoming state water

[3] Based on 2019 jobs reported in Mission Canyon and City of Santa Barbara per the Employment Development Department (EDD) web page, accessed August 2020: https://www.labormarketinfo.edd.ca.gov/data/employment-projections.html.

conservation regulations. This Plan will allow the City to implement water use conservation measures in line with current conditions and proposed future regulations regarding water sustainability and reliability. The Plan considers best management practices consistent with current regulations and best practices in the industry and has been guided by the American Water Works Association Manual of Practice *M52 – AWWA Water Conservation Programs – A Planning Manual* (AWWA, 2017).

Furthermore, this Plan supports the Water Conservation Act of 2009 (Senate Bill X7-7 or SB X7-7) requiring urban water agencies to collectively reduce statewide per capita water use by 20% before December 31, 2020. The gallons per capita per day (GPCD) target for the City was determined to be 117, as documented in the 2015 Urban Water Management Plan (UWMP). The City's compliance with SB X7-7's 20% by 2020 is illustrated in Figure 1-3, as is the City's accomplishments resulting from conservation planning efforts.

Figure 1-3. City of Santa Barbara Water Use in Gallons Per Capita Per Day – June 30, 2020



The GPCD values in the figure above exclude blend water used for recycled water production.

To forecast and plan for long-term demand management reductions and meet the SB X7-7 per capita water use reduction requirements, the City hired Maddaus Water Management in 2010. MWM analyzed the existing conservation program and used its proprietary Least Cost Planning Decision Support System Model (DSS Model) to evaluate current and potential water conservation measures. The DSS Model quantified the demand reduction effects of these measures along with the effects of plumbing codes and appliance standards. Results of the 2010 modeling effort were used in the 2011 Long Term Water Supply Plan (LTWSP) and informed water supply policies still in use by the City today.

The City uses benchmarks to assess ongoing program implementation and effectiveness as part of the City's Paradise Performance Program (P^3). The P^3 metrics are adopted by the City Council each year and must be measurable, reflect current workload, practices, and policies. Implementation of the 2011 Long Term Water Supply Plan and supporting conservation measures from the 2010 DSS Model have been assessed through various P^3 metrics over the past ten years. These include metrics on meeting the SB X7-7 20% by 2020 GPCD target annually, participation in the City's Water Education Program for youth, attendees at landscaping workshops for homeowners and professionals, landscape rebate participation, Water Checkup appointments for homes and businesses, the percentage of e-newsletters read by customers, and more. An example of the City's performance measures report can be found in Appendix G.

In 2018, California Governor Edmund G. Brown Jr. signed SB 606 and AB 1668. These bills were intended to implement "Making Water Conservation as a California Way of Life" legislation to better prepare the state for droughts and climate change through the establishment of statewide mandates for efficient water use. This included a framework for the implementation and oversight of the new standards, which must be in place by 2022. The two bills strengthen the state's water resiliency in the face of future droughts with provisions that include the following:[4]

- Establishing an indoor per person water use goal of 55 gallons per day until 2025, 52.5 gallons from 2025 to 2030, and 50 gallons beginning in 2030
- Creating a standard for outdoor residential and dedicated irrigation meter water use based on climate and landscaped area of the urban water provider (to be determined)
- Setting a water distribution system water loss standard (to be determined)
- Requiring urban water suppliers to set annual water budgets and make preparations for drought

The purpose of this Water Conservation Strategic Plan is to present an overview of the conservation evaluation process that has been completed for the City of Santa Barbara. The goal is to develop a plan that will optimize program costs and water savings and lay a foundation for compliance with forthcoming state mandates. The City has a current Water Conservation Program, which includes the measures that comprise Conservation Program A (described below) and additional qualitative measures. This Plan evaluates whether expanding existing efforts is a feasible and cost-effective way to meet future water needs in comparison to using and/or developing other sources of water supply.

1.3 Plan Development

The City worked closely with MWM to compile extensive historical data on the region, agency, conservation measures, production, consumption, weather, and various census data points. Together, these formed the foundation for MWM's DSS Model, which prepares long-range water demand and conservation water savings projections.[5] More detailed information about the DSS Model can be found in the appendices of this Plan, including a description of the assumptions, analysis, and methodology used.

Based on the analysis of current water use patterns, and taking into account characteristics of the service area, a list of more than 100 potential conservation measures was compiled and evaluated. In the previous effort

[4] https://www.gov.ca.gov/2018/05/31/governor-brown-signs-legislation-establishing-statewide-water-efficiency-goals/

[5] The DSS Model is an "end-use" model that breaks down total water production (water demand in the service area) to specific water end uses, such as plumbing fixtures and appliance uses. It uses a bottom-up approach that allows for multiple criteria to be considered when estimating future demands, such as the effects of fixture replacements, plumbing codes, and conservation efforts. It also may use a top-down approach with a utility prepared water demand forecast.

conducted by the City in 2010, significant stakeholder input was gathered through work groups established to evaluate needs and rank measures per pre-defined and stakeholder-defined criteria. The measure screening in this current effort was an update to the 2010 endeavor. During this measure screening, 21 measures were selected for further detailed economic analysis. The evaluation included measures directed at existing accounts, as well as new development measures to make new residential and business customers more water efficient. Assumptions and results for each of the 21 individual measures and 3 programs (Program A, B, and C) are described in detail in this Plan.

Following the DSS Model completion and adoption of Program B as the Recommended Program for implementation, the Water Conservation Strategic Plan was prepared. This Plan is aligned to the new state legislation SB 606 and AB 1668 framework. However, details of the state plan have yet to be released. When the detailed guidance is available, this Plan may need to be modified to include any new or revised actions required of the City per state legislation.

1.4 Purpose and Scope of Strategic Plan

The intention of this Plan is to systematically evaluate and quantify a long-term water conservation strategy for the City's service area. Through the identification and prioritization of conservation measures, the Plan enables the City to project long-range demands, identify attainable conservation goals, develop strategies, and raise awareness. By combining new initiatives with existing programs, this comprehensive strategy and slate of conservation activities will contribute to a more sustainable management of water supplies for the Santa Barbara community.

This Plan incorporates the City objectives as follows:

- Provide assessment, analysis, and measurement of completed and existing water conservation programs
- Identify new cost-effective water conservation opportunities
- Lay a foundation for compliance with forthcoming state mandates

In addition, the Plan is intended to serve as a guide for the City regarding future water use efficiency and conservation investments and activities. It includes a functional implementation plan to establish and administer cost-effective conservation measures.

Based on a preliminary analysis of the 21 individual measures, three programs (Programs A, B, and C) were designed by the City. Each of the three programs were evaluated to determine the net effect of running multiple measures together over the 31-year period of analysis (2020–2050).

2 HISTORICAL AND CURRENT WATER USE

2.1 Information Review and Data Collection Methods

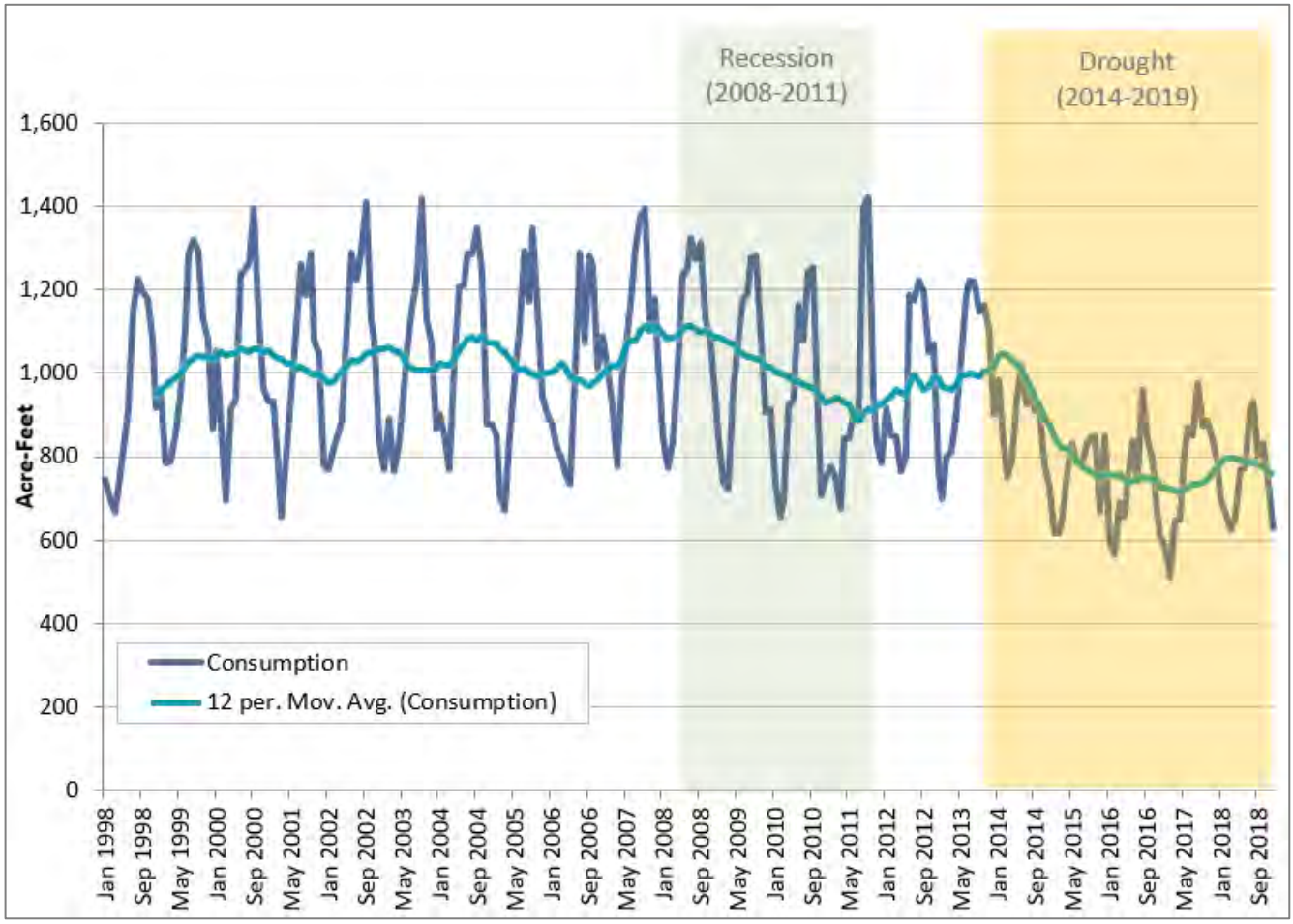
The data from 2018–2019 was used to derive typical non-drought average water use per account per day. Based on the City's water billing system, residential water use was broken down into single family and multifamily categories. Historical data was segregated into indoor and outdoor water use by customer type using the monthly billing data. Non-residential categories of use were analyzed separately. Average daily commercial and institutional water use was expressed on a gallons-per-account basis.

Figure 2-1. Data Used in the DSS Model

2.2 Consumption

Figure 2-2 illustrates historical monthly total consumption from the last 20 years. Consumption data was measured at the customer meters. The City's water use decreased with the 2008-2011 recession and the multi-year drought which affected the City from 2014-2019.

Figure 2-2. City of Santa Barbara Historical Consumption

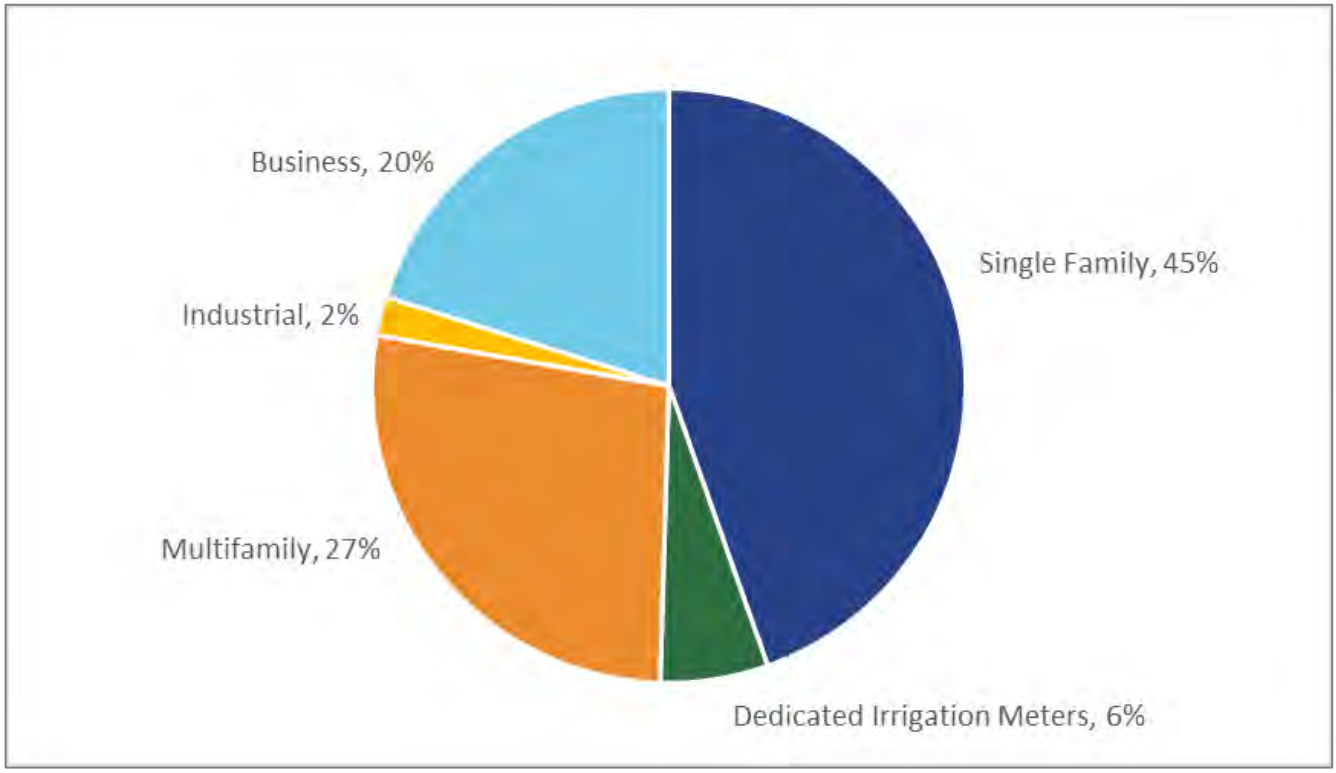


The City has several types of water users with approximately 27,627 active connections (excluding fire lines), all of which are metered. For the purpose of this analysis, current and projected potable water user categories are classified as follows:

- Single Family
- Multifamily
- Commercial
- Industrial
- Irrigation

Figure 2-3 presents the water use profile of the average annual billed metered consumption of the various user categories based on monthly water use and account data from years 2018–2019. This was used to derive average per account per day water use.

Figure 2-3. Average Consumption by User Category



In the figure above, customer category potable water use is based on 2018–2019 historical water use per account by customer category, representing post-drought conditions.

2.3 Historical and Current Conservation Program

The City's Water Conservation Program began as a response to drought in the late 1970s. In 1988, the Water Conservation Program was increased as a result of the recommendations from the City's Five-Year Water Policy Action Plan. As a result of the 1987-1991 drought, the City accelerated implementation of the Water Conservation Program. The City's 1994 Long Term Water Supply Plan identified a goal of 1,500 AFY of additional water conservation, a target that was met and exceeded.

In December 1990, the Santa Barbara County Regional Water Efficiency Program (RWEP) was established as a collaboration among the many local water purveyors and the County Water Agency of Santa Barbara. RWEP promotes the efficient use of urban and agricultural water supplies countywide and provides information and assistance to the 16 local water purveyors within the county, including the City of Santa Barbara. RWEP members coordinate cooperative water conservation efforts among purveyors, co-fund projects and programs, act as a clearinghouse for information on water efficiency, manage specific projects and programs, and monitor local, state, and national legislation related to efficient water use. RWEP provides an annual report with information on accomplishments; the FY2019-20 report can be found in Appendix H.

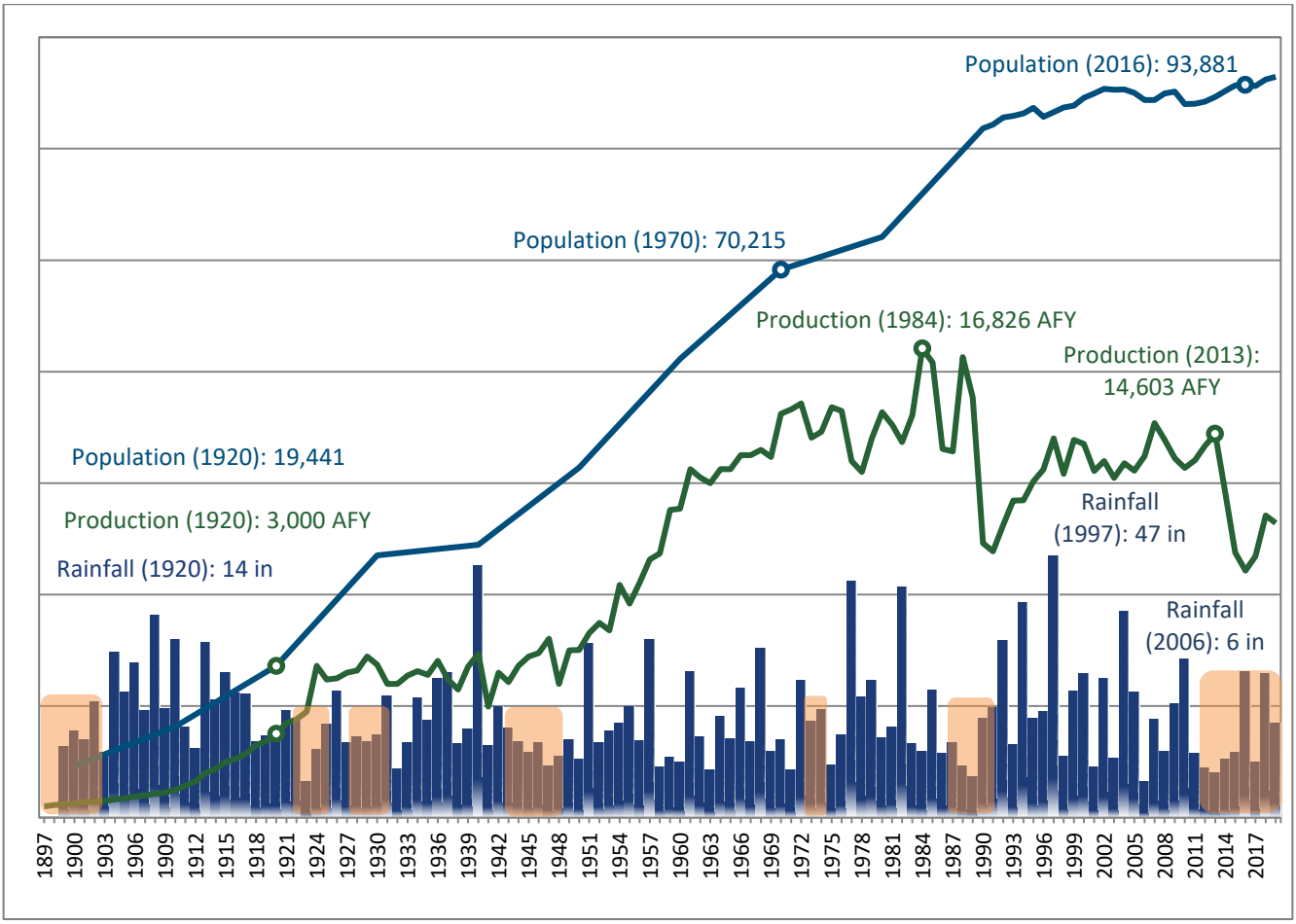
In January 1992, the City joined the California Urban Water Conservation Council (CUWCC), now the California Water Efficiency Partnership (CalWEP), by signing the Memorandum of Understanding Regarding Urban Water Conservation. Since that time, the City has been actively implementing the Best Management Practices (BMPs) as well as additional water conservation measures. Additionally, implementing the BMPs satisfies contractual requirements with the Bureau of Reclamation for the Cachuma Reservoir Project.

In accordance with the policies of the City's 2011 LTWSP, the City's Water Conservation Program is operated to minimize the use of potable water supplies, meet the requirements of the BMPs, and achieve compliance with

SB X7-7's 20% by 2020 per capita water use reduction requirements. Water conservation measures are evaluated for cost effectiveness based on the avoided cost of additional water supplies.

The City's long-term commitment to water conservation is evident in reductions in water demand achieved over the past 30 years. Total system production has dropped from a peak near 16,800 acre-feet/year (AFY) in the mid-1980s to about 14,600 AFY before the current drought and averaging approximately 9,900 AFY as of the writing of this plan (2015–2019). This water use trend (including the recycled water system production that started in 1989), along with historical annual population and rainfall in the City, is demonstrated in the following figure with historical drought periods noted.

Figure 2-4. City of Santa Barbara Population, Water Production, and Rainfall, 1897–2019



The total water production in the above graph includes the recycled water system production that came online in 1989. Orange bars indicate periods of drought.

Water use efficiency in the City is supported by a coordinated effort of the City and RWEP initiatives to create a holistic approach for providing the needed water conservation tools to both the water system and each customer within the service area. The City requires water efficiency in building codes and standards as a result of state-guided mandates as well as increasingly strict local ordinances.

2.3.1 Utility Operations Programs

These measures encompass preventing water waste, reducing water loss, and addressing water efficiency in development projects.

- **Water Waste Prevention** – City Ordinance No. 4558, adopted in February 1989, prohibits the waste of water, which is defined as any excessive, unnecessary or unwarranted use of water, including, but not

limited to: 1) any use which causes significant runoff beyond the boundaries of property served by a meter; 2) failure to repair any leak or rupture in any water pipes, faucets, valves, plumbing fixtures or other water service appliances within 72 hours after notice by the City; and 3) irrigation during and for a period of 48 hours after a measurable rainfall event. The City makes educating the community on water waste practices a high priority. The City's water waste ordinance can be found in the City's municipal code SBMC §14.20.007 Prohibition Against Waste of Water.[6] Enforcement of the City's water waste ordinance is found in SBMC §14.20.226 Penalties and Charges.[7]

- **Water Loss Control** – The City has been conducting annual water audits of the water distribution system since 2010 using the approach described in the AWWA Manual *M36 – Water Audits and Loss Control Programs* (AWWA, 2016). The purpose of the audit is to quantify the City's real losses (water physically lost from the system through leaks, breaks, theft, and other means) as well as apparent losses (water lost through meter under registration and data handling errors). In addition to conducting annual water loss audits, beginning in 2016, the City has worked with a third-party validator to complete a level 1 validation of each water audit. This ensures the data used to compile the audits is as accurate as possible and helps to identify areas where data collection and quality could be improved.

  Furthermore, the City has invested in multiple capital projects to manage system losses. The City launched a comprehensive Meter Replacement Program in 2014 with goals to target and replace all 1", 3/4" and 5/8" meters with Advanced Metering Infrastructure (AMI) compatible meters, which combined totals approximately 25,500. To date, this work is essentially complete, with only a handful of these smaller meters left to replace. In addition, the remaining 2,000 meters sized 1 ½" and above are in the process of being replaced with AMI compatible meters that allow for more accuracy at lower flows. Over 2,500 meters have been bench-tested to determine meter accuracy trends. The improved accuracy of the new meters has been effective in reducing the City's apparent losses.

  In response to increased water main breaks in the late 1980s, the City Council created what became known as the Water Main Replacement Program by establishing a goal to replace 1% of the water mains annually. This goal was an integral part of the Water Capital Improvement Program for over 30 years. In June of 2018, the City Council approved an increase in the replacement goal to 2%, or approximately 6 miles, of the water mains on an annual basis. One of the primary long-term benefits of the program is reducing the City's real losses by lessening the frequency of water main breaks.

  To address water lost during annual maintenance activities, the City invested in a Neutral Output Discharge Elimination System (NO-DES) truck to flush water distribution pipelines. Before the NO-DES truck was in use, the City would have to complete this distribution system maintenance by flushing water from fire hydrants. With NO-DES technology, the City is now able to clean the distribution lines by connecting two fire hydrants to a filtration truck, flushing, circulating, and filtering the water, then returning the water back into the distribution system.

  In November 2018, the City Council approved an AMI pilot project. The robust customer consumption data AMI provides will help the City better manage apparent and real water losses. AMI will help in identifying broken or under registering meters, which will reduce apparent losses. With AMI, the City will also be able to better monitor customer consumption within specific areas of the system and compare that against water delivered to those areas. These kinds of analyses will help identify leaks in the distribution system and reduce real losses. The AMI cellular pilot project was launched in January 2019 for 200 meters, and the fixed network pilot project was launched in January 2020 for 200 meters.

[6] City of Santa Barbara. Municipal Code, SBMC §14.20.007, accessed August 2020: http://qcode.us/codes/santabarbara/?view=desktop&topic=14-14_20-14_20_007

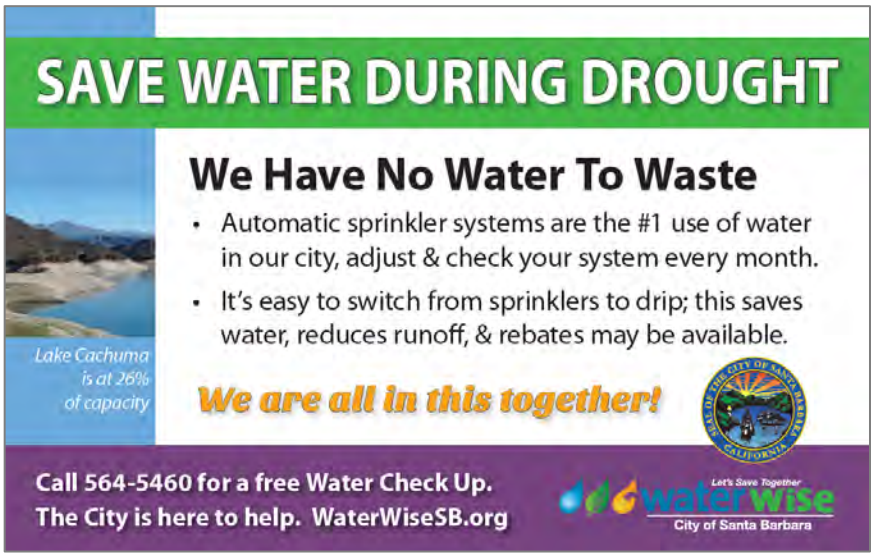
[7] Ibid. Municipal Code, SBMC §14.20.0226 accessed August 2020: http://qcode.us/codes/santabarbara/?view=desktop&topic=14-14_20-14_20_226

- **Landscape Design Standards** – For development projects, the City has adopted Landscape Design Standards for Water Conservation that are more stringent than California's Model Water Efficient Landscape Ordinance (MWELO), and the City has submitted an annual report to the state since December 2015. The annual report includes the total number of approved projects and square feet of new/revised landscape for that year. As of December 2019, over 300 landscape projects totaling over 2.7 million square feet have been approved. The City reviews plans and conducts inspections to ensure compliance with design standards, including water wise plant palette, efficient irrigation, proper pressure regulation, smart irrigation controllers, mulch, and more. The Landscape Design Standards were originally adopted by the City Council in 1989 and updated in 2008.

2.3.2 Public Information and Outreach

The City continues to raise awareness among all customer types of the importance of efficient and responsible water use. The City works to foster a culture of conservation within the community and affect impactful behavioral changes. Components of the City's existing public education program include the following:

- **Effectively communicating the value of water** – The City regularly provides the public with images and status updates of water sources. Additionally, each May, the City celebrates May Water Awareness Month with public displays in City Hall and the libraries to communicate information on local water sources, the history of water in Santa Barbara, water efficiency, and more.



City of Santa Barbara Advertising Example.

- **Providing information on methods and opportunities for reducing consumption** – The City engages customers in water efficiency through the City's website, newsletters, informational videos, social media, printed materials, public presentations, workshops, and more. The City promotes the use and maintenance of water efficient WaterSense products, practices and services. Free Water Checkup appointments are available to all customers and entail an onsite evaluation with City staff to discuss water usage and opportunities for efficiency.
- **Delivering consistent, persistent messages and media campaigns** – This is done through radio messages, television commercials, print advertising, social media messaging, digital advertising, and more, including messaging for both indoor and outdoor water use efficiency. Messages are delivered year round and are tailored to the season (i.e., "turn it down" in the fall and "sprinkler spruce up" in the spring).

Current Public Information Programs

- **Water Conservation Hotline** – The hotline handles the incoming calls for the Water Conservation Program. Staff schedule free Water Checkup appointments, educate customers on water usage, and direct customers to resources.
- **Website** – The City's Water Conservation Program website is www.SantaBarbaraCA.org/WaterWise. Additionally, the City contributes to and promotes the website for the Regional Water Efficiency Program of Santa Barbara County: www.WaterWiseSB.org/.

- **Conservation Videos** – DIY and informational videos on sustainable landscaping, leak detection, efficient irrigation, water supply, and more are on the City's Water Conservation YouTube Channel: www.YouTube.com/SaveWaterSB.
- **Media Campaign** – Spring, summer, and fall media campaigns are implemented by the City, often in conjunction with RWEP to expand reach. Advertisements are placed online, on TV, in movie theatres, in print publications, and on the radio.
- **Water Bill Messages/Bill Insert/e-Newsletter** – Monthly water conservation messages are printed directly on the water bill and are customized by customer classification. A monthly water bill insert is mailed with all water bills and available electronically for online bill pay customers. A Water Resources e-newsletter is sent out quarterly and a citywide "City News in Brief" e-newsletter is sent out weekly, with a water efficiency section included at least once a month.
- **Social Media** – Outreach on water conservation actions and events are posted on the Nextdoor website, www.Facebook.com/SaveWaterSB, and www.Twitter.com/SaveWaterSB.

"Sprinkler Spruce Up" Media Campaign.

- **Demonstration Gardens** – The Water Conservation Program has many beautiful water wise demonstration gardens to showcase sustainable landscaping: Alice Keck Park Memorial Garden in conjunction with the Parks Department; the Firescape Garden in conjunction with the Fire Department, Spencer Adams Park in conjunction with the Parks Department and via a Surfrider Foundation Whale Tail Grant, the El Estero Recycled Water Garden, the Water Wise Home Garden in conjunction with the Santa Barbara Botanic Garden, and the Santa Barbara Association of Realtors Rainwater Garden in conjunction with the Association of Realtors.
- **Public Events** – City staff set up tables and displays and engage the public in water efficiency information at local events such as Earth Day, All Around Landscape Expo, Santa Barbara Botanic Garden Fall Plant Sale, various school science nights, and neighborhood association meetings.
- **Garden Wise TV Show** – Garden Wise is a 30-minute quarterly television show about designing and maintaining sustainable landscapes. Featured segments include: Plant Rant, What Tree is That?, Crimes Against Horticulture, and Design a Water Wise Garden featuring local designers. This program is coordinated and co-funded through RWEP.
- **Water Wise Gardening for Santa Barbara County Website** – This is a robust website of gardening information tailored to the Santa Barbara climate with an extensive plant database of over 1,000 water wise plants, more than 300 photos of local gardens, and guidance on gardening design and practices: www.waterwisegardeningsb.org/. This program is coordinated and co-funded through RWEP.

City of Santa Barbara's Television Program Garden Wise TV.

Current School Education Programs

- **Classroom Presentations** – This involves fun and engaging K-6 presentations about Santa Barbara's water supply, the water cycle, water conservation, and wastewater treatment. Songs, photos, and videos are used, based on the age group. Sixth grade presentations include the Living Wise kit and curriculum – a take home kit with water and energy fixtures and activities to conduct at home. Presentations are tailored to grade or class objectives and are aligned to California content standards and the Education and the Environment Initiative Curriculum.
- **Field Trips** – Water facilities such as the El Estero Water Resource Center, Cater Water Treatment Plant, Charles E. Meyer Desalination Plant, Sheffield Reservoir, and the Firescape Garden are available for school and community group tours with City personnel to lead and educate attendees.
- **Musical Assemblies** – Musical-comedy education shows about water supplies, the value of water, groundwater, and water efficiency are part of this program, which is coordinated and co-funded through RWEP.
- **WaterWise High School Video Contest** – This is an annual countywide contest for high schools to create and submit a 30-second public service announcement for water efficiency. Winning videos are used for television and movie theatre advertising. This program is coordinated and co-funded through RWEP.
- **WaterWise Science Fair Award** – This special award is part of the larger Santa Barbara County Science Fair for junior and senior science fair projects that address water efficiency, water supplies, or water treatment. This program is coordinated and co-funded through RWEP.

2.3.3 Outdoor Water Use Efficiency

The City's outdoor water use efficiency programs are intended to promote the "new normal" of water wise landscaping through proper design, installation, and maintenance of new and existing landscapes and irrigation systems. The City's active measures also include water wise landscape design information, landscape classes and hands-on workshops, demonstration gardens, irrigation how-to videos, and educational programs. Recent participation levels for the City's active water conservation programs over the past five fiscal years can be found in Table F-3 in Appendix F.

- **Smart Landscape Rebate Program** – This is a rebate to replace turfgrass and/or an inefficient sprinkler system in commercial and residential landscapes. The rebate is for 50% of the material costs of pre-approved irrigation equipment and landscape materials.

Smart Landscape Rebate Program Before and After Images.

- **Irrigation Evaluations** – As an element of the Water Checkups, staff perform site-specific landscape irrigation surveys that include checking the irrigation system for maintenance and repairs, reviewing the irrigation schedule, and making recommendations for adjusting the programing of the irrigation controller.
- **Irrigation Budgets for Dedicated Irrigation Meters** – The City has budget-based rates for accounts with dedicated irrigation meters to incentivize water efficiency. For the City's over 750 irrigation meters, the monthly water budget is determined by the property's irrigated landscaped area, the water requirements of plants, and the current weather conditions. The purpose of providing a monthly water budget is to bill based on the water needs of the landscaping; water use that exceeds the budget is billed at a higher rate. Monthly online water use reports provide education to customers to identify ways to irrigate more efficiently and track their usage compared to their budget.
- **Green Gardener Program** – Taught through Santa Barbara City College School of Extended Learning, gardeners are trained in resource efficiency and pollution prevention landscape maintenance practices. Gardeners attend a 15-week course taught in both English and Spanish covering topics including irrigation design and maintenance, fertilizing, soil health, integrated pest management, pruning, and reduction of green waste. This program is coordinated and co-funded through RWEP.
- **Mulch Delivery Rebate** – The City will rebate the cost of up to two dump truck loads per year of county mulch deliveries to reduce evaporation and increase water retention in the soil.
- **Graywater Information** – The City provides education on the use of graywater with handouts, fact sheets, sample plan sheet, hands-on workshops, 101 classes, videos, and information on the City's website. The City promotes the use of graywater in accordance with the California Plumbing Code Chapter 16A.[8]
- **WaterWise Garden Recognition Contest** – Residential gardens are evaluated for water efficiency, design elements, and sustainability. The winning garden is submitted to the countywide contest for the top prize. Winning properties receive an engraved sandstone boulder and are highlighted in public outreach to encourage water wise practices. This program is coordinated and co-funded through RWEP.

[8] California Department of Water Resources. (2016). Chapter 16A Non-Potable Water Reuse Systems. https://up.codes/viewer/california/ca-plumbing-code-2016/chapter/16A/non-potable-water-reuse-systems#16A

2.3.4 Residential Programs

In addition to the programs previously listed, the following programs are geared toward residential customers:

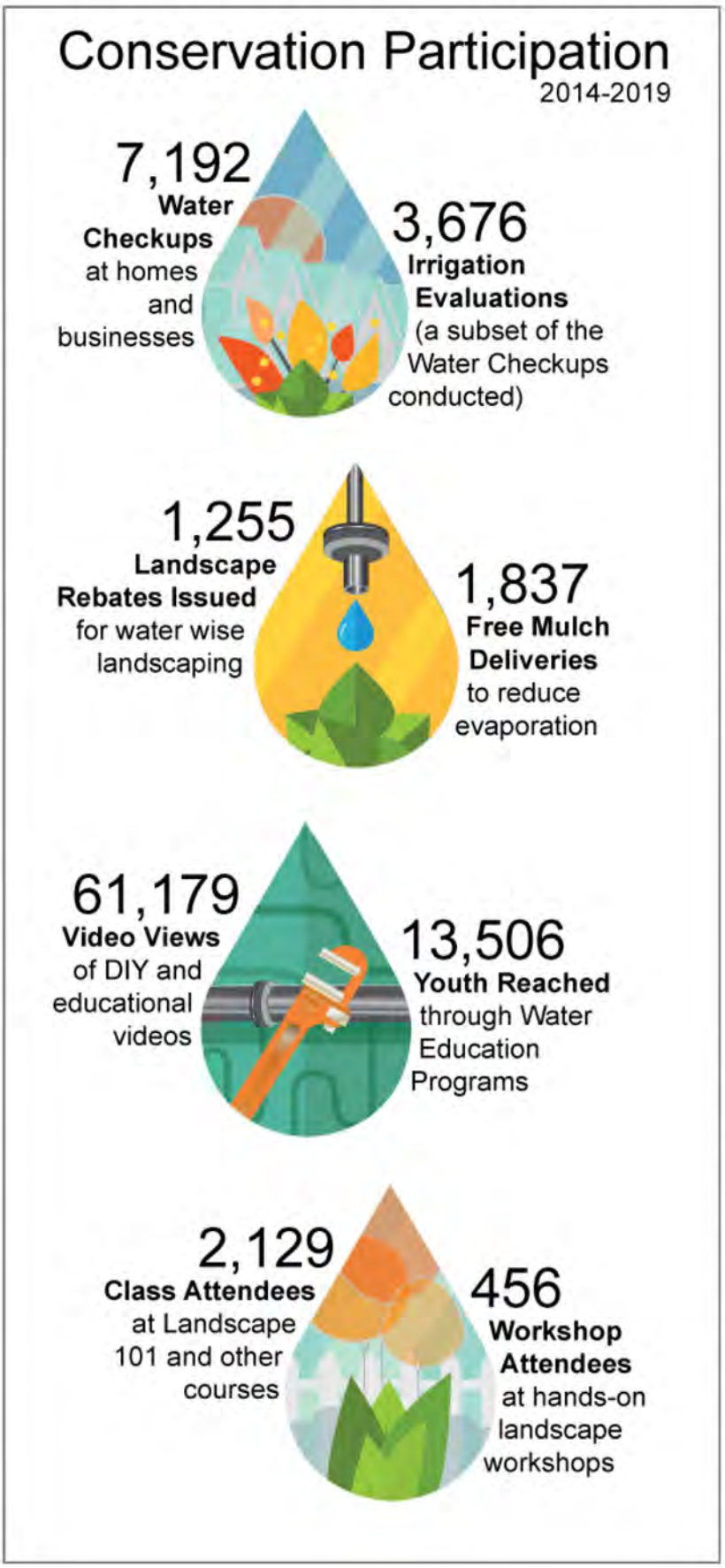
- **Water Checkup Appointments** – The City's Water Resources Specialists conduct free Water Checkup appointments upon request by water customers. A Water Checkup includes evaluating all water uses on the property and providing recommendations to the customer for improved efficiency including indoor usage, leak detection, meter reading demonstration, irrigation systems evaluation, and specific recommendations on improvements and upgrades.
- **Washing Machine Rebate Program** – The Smart Rebates Program is coordinated by CalWEP for participating water suppliers throughout California. The City participates with high efficiency clothes washer rebates for residential customers who replace an existing high water use washing machine with a qualifying high efficiency model.

2.3.5 Commercial, Industrial and Institutional (CII) Programs

In addition to the programs previously listed, the following programs are geared toward CII customers:

- **CII WaterWise Survey and Incentive Program** – This tailored program for high water use CII customers includes a comprehensive water survey as well as rebate incentives for making recommended upgrades. The survey includes identifying high water use appliances, searching for hidden leaks, cataloging use and flow rates of fixtures, and identifying areas for improvement. A summary report is generated which includes an analysis of the facility's water use, water and cost-saving recommendations eligible for monetary incentives from the City, and estimated payback periods.
- **Lodging Industry Towel and Linen Cards** – Free linen cards and towel rack hangers are available to encourage patrons to conserve water during their stay by reusing towels and linens.
- **Restaurant Table Cards** – Free table tents are available to inform restaurant customers that water will be served upon request.
- **Green Business Program of Santa Barbara County** – Existing businesses are certified through onsite evaluations from City staff. New and existing certified Green Businesses receive workshops, trainings, resources, and recognition. Organized by the California Green Business Network, Santa Barbara County.

Restaurant Table Card Example.


Conservation Participation
2014-2019
7,192
Water Checkups at homes and businesses
3,676
Irrigation Evaluations (a subset of the Water Checkups conducted)
1,255
Landscape Rebates Issued for water wise landscaping
1,837
Free Mulch Deliveries to reduce evaporation
61,179
Video Views of DIY and educational videos
13,506
Youth Reached through Water Education Programs
2,129
Class Attendees at Landscape 101 and other courses
456
Workshop Attendees at hands-on landscape workshops

3 FUTURE WATER USE OBJECTIVES

The City utilizes a suite of various benchmarks to assess progress in the implementation of the ongoing conservation program. A sample report demonstrating past conservation measure implementation tracking can be found in Appendix G. The City also tracks SB X7-7 per capita water use goals as well as measures performance metrics such as number of rebates administered, students reached, classes held, and Water Checkups. At this time, City system-wide total water use remains 30% below year 2013 water use. Looking ahead, the City plans to track state legislation metrics related to the future water use objectives as the standards are developed through the state's stakeholder process by DWR and the State Water Resources Control Board (SWRCB).

A supply assessment is conducted regularly of the water supply portfolio demonstrating how conservation is evaluated and regarded as equal to other water supply options. When the City conducts supply and demand forecasting analyses the estimated water made available through conservation is a part of the supply portfolio. This is evident in the City's previous 2015 and pending 2020 Urban Water Management Plan as well as the Water Supply Management Reports that are adopted annually.[9]

3.1 California Legislation and the Water Use Objectives

On April 7, 2017, the state of California released the "Making Water Conservation a California Way of Life, Implementing Executive Order B-37-16" Final Framework Report[10] (State Framework Report). The State Framework Report, which builds upon Governor Brown's call for new long-term water use efficiency requirements in Executive Order (EO) B-37-16, provided the state's proposed approach for implementing new long-term water conservation requirements. A key element of the report is the proposed new water use targets for urban water suppliers that go beyond existing SB X7-7 requirements[11] and are based on strengthened standards for indoor residential per capita use, outdoor irrigation, CII water use, and water loss.

On May 17, 2018, the California Legislature adopted SB 606 and AB 1668 to implement new long-term water use efficiency requirements, including new urban water use objectives for urban water suppliers. The legislation requires the State Water Resources Control Board, in coordination with DWR, to adopt long-term standards for the efficient use of water. The legislation establishes specified standards for per capita daily indoor residential use. In addition, with stakeholder input, the SWRCB will adopt performance measures for CII water use and long-term efficiency standards for outdoor water use and water loss.

The legislation requires each urban retail water supplier to calculate and report an urban water use objective, which is an estimate of aggregate efficient water use for the previous year based on the adopted water use efficiency standards. Urban retail water suppliers will be required to calculate and report urban water use objectives by November 1, 2023 and by November every year thereafter, and to compare actual water use to the objective for the prior year by the same date.

The bills grant SWRCB the authority to enforce compliance with the urban water use objectives, with enforcement actions ramping up over the first three years of implementation. The bills also establish a schedule for state agencies to develop the methodology for implementing the requirements, as presented in Table 3-1.

[9] https://www.SantaBarbaraCA.gov/Drought

[10] California Department of Water Resources, et al. (2017). *Making Water Conservation a California Way of Life, Implementing Executive Order B-37-16*.

[11] SB X7-7, also known as the Water Conservation Act of 2009, was a significant amendment introduced after the drought of 2007-2009 and because of the California governor's call for a statewide 20% reduction in urban water use by the year 2020.

Table 3-1. Implementation Schedule for SB 606 and AB 1668 Key Requirements

Date	SB 606/AB 1668 Key Requirements
January 1, 2021	1. DWR to recommend to legislature standards for indoor residential water use. Defaults are: • 55 GPCD until 2025 • 52.5 GPCD from 2025 until January 2030 • 50 GPCD beginning in 2030 2. DWR to provide each urban retail water supplier with data regarding irrigable lands at level of detail sufficient to verify accuracy at the parcel level
October 1, 2021	1. DWR to recommend standards for outdoor residential use for adoption by SWRCB • Incorporate Model Water Efficient Landscape Ordinance principles • Applies to irrigable lands • Include provisions for swimming pools, spas, etc. 2. DWR to recommend performance measures for CII water use, including: • CII classification system • Minimum size thresholds for converting mixed CII meters to dedicated irrigation meters • Recommendations for CII best management practices 3. DWR to recommend variance provisions for: evaporative coolers, horses and livestock, seasonal populations, soil compaction/dust control, water to sustain wildlife, and water for fire protection 4. DWR to recommend standards for outdoor irrigation of landscape areas with dedicated irrigation meters and incorporate MWELO principles.
June 30, 2022	1. SWRCB to adopt long-term standards for efficient water use: • Outdoor residential • Outdoor irrigation of landscape with dedicated irrigation meters at CII customer sites • Water loss (consistent with SB 555) 2. SWRCB to adopt performance measures for CII water use
November 1, 2023 and annually thereafter	1. Urban water supplier shall calculate its urban water use objective: • Efficient indoor residential water use, plus • Efficient outdoor residential water use, plus • Efficient outdoor water use through dedicated irrigation meters at CII customer sites, plus • Efficient water loss, plus • Variances as appropriate 2. Urban water supplier shall submit report to DWR on urban water use objectives, actual urban water use, implementation of CII water use performance measures, and progress towards urban water use objective.

4 CONSERVATION MEASURE EVALUATION

This section details the screening process, the conservation measures that were analyzed, the measure assumptions, and inputs used in the DSS Model.

4.1 Screening of Conservation Measures

This section presents the City's goal to develop a Plan that would result in the greatest ease and efficiency of program administration, the lowest cost of implementation, and the greatest water savings. The measures also needed to address water conservation across all relevant customer categories. The screening process undertaken with the City's staff yielded 21 measures for further evaluation.

The experience of many utilities has shown there is a reasonable limit to how many measures can be feasibly implemented at one time. Programs that consist of a large number of measures are historically difficult to implement successfully. Therefore, prioritization of measures is important both as an outcome of this planning effort and as the program is implemented. The approach to program implementation is viewed as a "living" process where opportunities may arise and be adopted as new technologies become available over time. Program timelines can also be adjusted, with the recognition that doing so may impact the savings objectives.

An important step in updating the City's Water Conservation Program included identification of new measures that may be appropriate and the screening of these measures to a short-list for detailed evaluation (benefit-cost analysis). This evaluation was specific to the factors that were unique to the City's service area, such as water use characteristics, economies of scale, and demographics.

Potential new measures for the City's 2020 Water Conservation Strategic Plan were screened using qualitative evaluation. The overall initial list of more than 100 potential water conservation measures was drawn from MWM and the City's experience, the previous conservation planning effort conducted in 2010, and a review of what other water agencies with innovative and effective conservation programs are currently implementing.

In the 2010 effort, significant stakeholder input was solicited from the City's community members. Numerous work groups (including work groups for indoor measures and outdoor measures) were established to evaluate a wide range of needs and rank measures per pre-defined and stakeholder-defined criteria. The measure screening conducted for this 2020 Plan was an update to the previous thorough endeavor.

In this measure screening update, City staff considered the criteria outlined in Figure 4-1 when evaluating whether a measure should be included in the DSS Model.

More details on the measure screening inputs and results can be found in Appendix E.

Figure 4-1. City of Santa Barbara Measure Screening Criteria

4.2 Conservation Measures Analyzed

Table 4-1 describes the 21 measures that were selected for analysis through the measure screening process. The list includes devices or programs 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.

Table 4-1. Measure Descriptions

Measure Name	Description
Commercial	
CII Water Survey Level 2 and Customized Rebate	Eligible CII customers can receive a thorough level 2 water survey targeting indoor and non-irrigation outdoor water uses. Financial incentives will be provided after analyzing the benefit-cost ratio of each proposed project. Rebates are tailored to each individual site and will be granted at the sole discretion of the City while funding lasts.
Ultra-High Efficiency Urinal Rebate	Provide a rebate for the installation of ultra-high efficiency urinals flushing 0.125 gpf (1 pint) or less.
Pre-Rinse Spray Nozzle Giveaway	Provide free 1.15 gpm (or lower) spray nozzles and possibly free installation for the rinse and clean operation in restaurants and other commercial kitchens.
Dipper Well Rebate	Rebate for retrofitting traditional constant flow dipper wells with on-demand or hot well dipper. Dipper wells common in ice cream and smoothie businesses.
Irrigation	
Rain Barrel Rebate	Provide an incentive for installation of rain barrels to offset potable irrigation use.
Large Rainwater Catchment System Rebate	Provide a rebate for installation of large rainwater catchment systems, minimum size of 250 gallons.
Irrigation and Landscape Rebate	Rebate on pre-approved irrigation equipment and landscape materials, such as drip irrigation, smart controllers, and water wise plants.
Free Sprinkler Nozzle Program	Provide low precipitation sprinkler nozzles free of charge via online voucher program to be redeemed at local irrigation stores.
Mulch Program	Subsidize delivery charges for free mulch offered by the county, up to two free deliveries every 12 months to reduce evaporation.
Residential	
Residential Rebates for HECW	Rebate for a high efficiency clothes washer. Only applicable on eligible models and for replacing an existing high-water using washer.
Pressure Reduction Valve Rebate	Provide a rebate to install pressure regulating valve on existing properties with pressure exceeding 80 psi.
Leak Detection Device Rebate	Provide a rebate for private leak detection/alert device that provides real time water usage data to customer and may allow for remote shutoff by the customer.
Hot Water on Demand Pump System Rebate	Provide a rebate to equip homes with efficient hot water on demand systems. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to reduce hot water waiting times.

Measure Name	Description
Ultra-High Efficiency Toilet Rebate	Rebate for replacing a toilet that uses 1.6 gallons per flush or more with a U.S. Environmental Protection Agency WaterSense-approved toilet that uses 0.8 gpf or less.
Full AMI Implementation – Online Water Use Software and Leak Detection Customer Notification	Full AMI Implementation cost for the meter transmitting units, radio or cellular network, and meter data management software. Measure includes customer leak notification via online water consumption software, phone, or e-mail.
Community & Education	
Water Conserving Landscape and Irrigation Codes	Enforce City's Landscape Design Standards for Water Conservation. Compliance with the Standards is mandatory for all new or altered landscaping proposed as a part of a project subject to review by any City design review body.
School Education	Offer school presentations, field trips, musical assemblies, video contests, teacher training, and multiple online and hands-on resources. The LivingWise® Program also is included in this measure and is a water and energy efficiency take home kit program for 6th graders designed to generate immediate and long-term resource savings.
General Public Education	This measure includes the City's general public outreach efforts. Advertising, website, gardening website, and all printed materials for events and Water Checkups, fliers, restaurant and lodging display cards, posters, etc.
Water Checkup	Onsite assistance program to work with customers to assess water usage on property, find leaks/causes of high water use, and identify ways to use water more efficiently.
Irrigation Evaluations	Onsite assistance program to work with customers to evaluate their irrigation system and provide specific recommendations on irrigation improvements, scheduling, and upgrades.
Toilet Flapper Leak Alert Giveaway	Provide toilet leak alert indication device for simple installation on toilet tanks. If flapper malfunctions, device notifies with light and/or sound.

Information about the DSS Model analysis approach to measure unit costs, water savings, and market penetrations can be found in Appendix D. Actual measure inputs used in the DSS Model to evaluate the water conservation measures selected by the City can be found in individual measure screenshots in Appendix E.

4.3 Comparison of Individual Conservation Measures

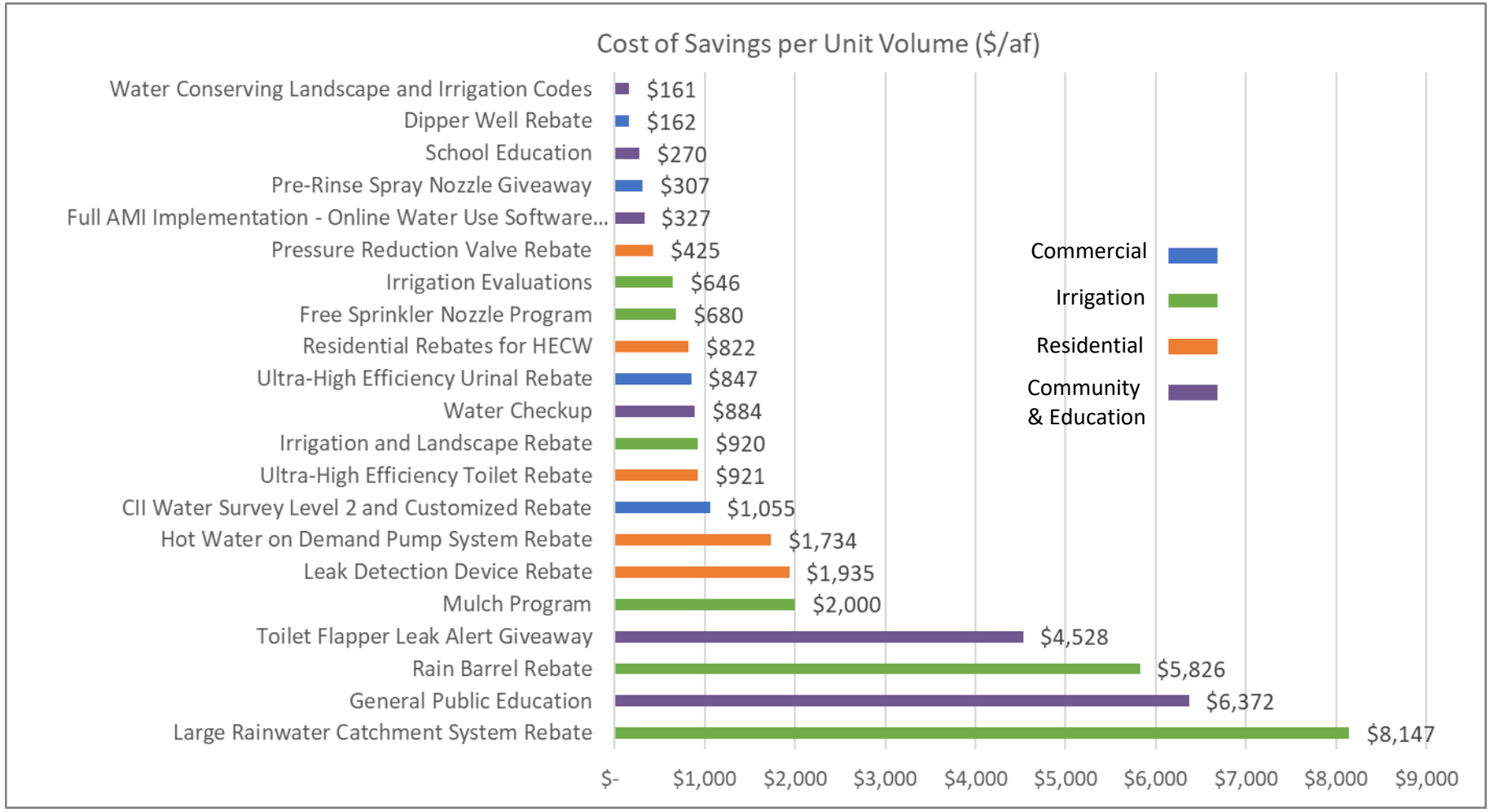
MWM conducted an economic evaluation of each selected water conservation measure using the DSS Model. Appendix F presents detailed results with how much water each measure will save through 2050, how much each measure will cost, and the cost of saved water per unit volume if the measure were to be implemented on a stand-alone basis (i.e., without interaction or overlap from other measures that might address the same end use or uses). Cost savings from reduced water demand was quantified annually and based on avoided costs provided by the City.[12]

While each measure was analyzed independently, it is important to note that very few measures operate independently. For example, Full AMI Implementation – Online Water Use Software and Leak Detection Customer Notification may lead to an Irrigation Evaluation or Irrigation and Landscape Rebate. Higher efficiency indoor fixtures go hand-in-hand with indoor water checkups and public education.

It should be noted that the water savings from General Public Education are not double-counted with other conservation measures. As a result, the costs appear significantly higher for General Public Education than for other measures due to the very minimal water savings estimated for the high staff time investment. However, other measures certainly would be less effective or possibly infeasible without an active outreach program. Without public outreach, customers would be unaware of conservation measures and participation would likely plummet. With that in mind, Figure 4-2 presents a comparison of each measure's cost of water saved per unit volume.

[12] The City's estimated average water production cost is $865/AF including treatment, energy, and transport costs. Water production costs are based on 2019 generated drought supplies and costs including the following supply sources: Cachuma, Gibraltar/Mission Tunnel, Cachuma carryover/MWD, groundwater, State Water, banked water/water purchases, existing desalination, and expanded desalination. The City's average wastewater cost of $1,017/AF is based on FY 2017 costs.

Figure 4-2. Conservation Measures – Cost Per Acre-Foot of Water Saved



The "General Public Education" conservation measure has minimal assigned water savings and is based on an investment in community education and awareness to help drive participation in other conservation measures.

5 CONSERVATION PROGRAM EVALUATION

This section provides a summary of which measures were included in each of the three conservation programs as well as which program the City selected to implement. The three programs were designed to illustrate a range of various measure combinations and resulting water savings. The following key items were taken into consideration during measure selection for Programs A, B, and C:

- Existing conservation measures
- Conservation measures recommended by AWWA, CalWEP (formerly CUWCC), DWR, and others
- New and innovative measures
- Measure equitability among customer categories
- Customer demographics

In addition, this section identifies and prioritizes the conservation programs and projects by cost effectiveness, quantifiable water savings, and compliance with American Water Works Association G480 Water Conservation Program Operation and Management Standard (G480 Standard).

5.1 Measure Selection for Conservation Program Alternatives

MWM developed an economic analysis to show the true cost of implementing water conservation programs. The City's existing conservation program was evaluated, then two additional, increasingly aggressive programs were developed for the City to consider.

Using the data gathered, MWM created a list of all potential program concepts that were appropriate for the City's service area to meet future regulatory and conservation compliance mandates. Factors for determining which measures should be in each program included budgeting, feasibility to implement the program, and the time at which each measure would need to be introduced to promote conservation efforts. Programs also needed to address water conservation across all relevant customer categories.

These program scenarios were not intended to be rigid but rather to demonstrate the range in savings that could be generated if selected measures were run at the same time. When programs were analyzed, any overlap in water savings (and benefits) from individual measures was considered to provide a total combined water savings (and benefits). Each program is described below:

- Program A: Current Measures. Current conservation program with no changes; includes 9 measures.
- Program B: Recommended Measures. In addition to existing efforts, includes more customer-centric, extended programs in indoor and outdoor efficiency as well as commercial efficiency; includes 17 measures. This is the recommended program.
- Program C: All Modeled Measures. In addition to all those above, includes expanded indoor residential incentives, including rain barrel and large rainwater catchment system rebates; includes all measures modeled in this effort for a total of 21 measures.

Figure 5-1 presents the City's conservation measure program scenarios, indicating which measures were selected and modeled within each program.

Figure 5-1. Selected Conservation Program Measures

Table 5-1 shows the benefit-cost ratios for conservation Programs A, B, and C. Each program's present value of water savings and utility costs as well as cost of water saved can be found in Appendix F.

Table 5-1. Comparison of Program Benefit-Cost Ratios

Conservation Program	Water Utility Benefit-Cost Ratio
Program A with Plumbing Code	0.96
Program B with Plumbing Code	1.08
Program C with Plumbing Code	1.07

Table 5-2 shows the water system demands for the City of Santa Barbara. Demand is shown in acre-feet in 5-year increments over the 31-year modeling period (2020-2050). Table 5-2 and Figure 5-2 include historical demand, demand with and without plumbing code, and projected demand with plumbing codes and three active conservation program scenarios.

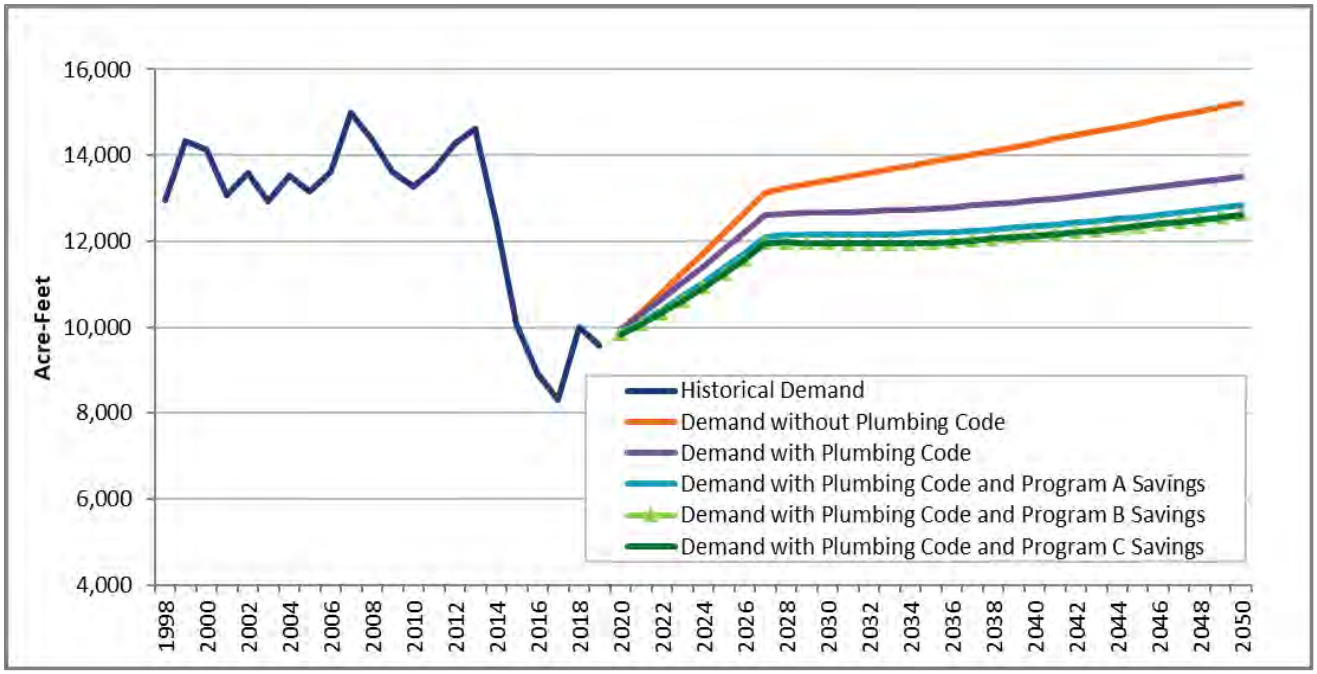
Table 5-2. City of Santa Barbara Potable Water System Demands for Years 2020-2050

AFY	2020	2025	2030	2035	2040	2045	2050
Baseline Demands	9,947	12,187	13,425	13,822	14,236	14,668	15,119
Plumbing Code Savings	-	387	760	1,093	1,352	1,561	1,737
Demands with Plumbing Code Savings	9,947	11,799	12,665	12,729	12,885	13,107	13,382
Conservation Program A Savings	96	434	531	565	599	637	677
Demands with Plumbing Code and Conservation Program A Savings	9,851	11,366	12,134	12,164	12,285	12,470	12,704
Conservation Program B Savings	105	561	718	803	817	848	878
Demands with Plumbing Code and Conservation Program B Savings	9,842	11,239	11,946	11,926	12,068	12,259	12,504
Conservation Program C Savings	107	566	722	807	821	852	882
Demands with Plumbing Code and Conservation Program C Savings	9,840	11,234	11,942	11,922	12,064	12,256	12,500

All numbers in the table above are listed in acre-feet/year.

Figure 5-2 presents historical and projected water demand in AFY given multiple scenarios. Plumbing code elements include current local, state, and federal plumbing code standards for retrofits of items such as toilets, urinals, showerheads, faucets, and clothes washers.

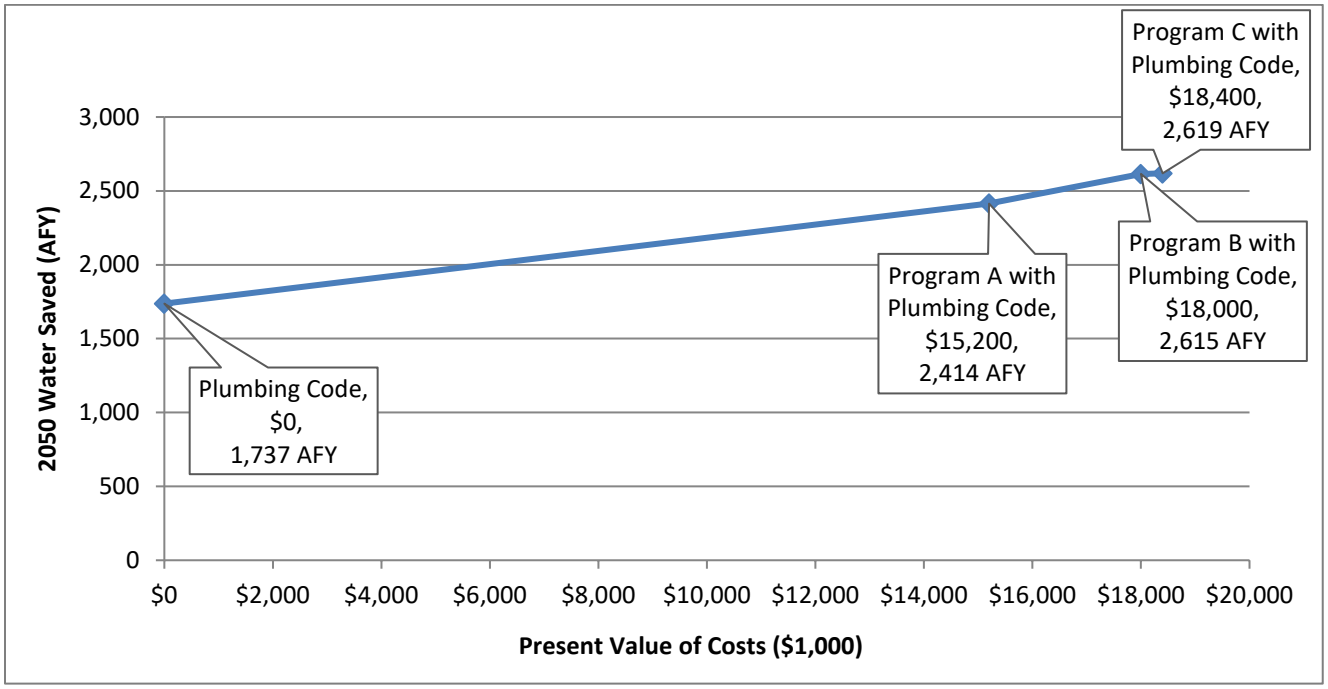
Figure 5-2. City of Santa Barbara Historical and Projected Demand



All line types shown in the legend are presented in the graph. Program B and Program C demand scenarios are close in value and therefore may be somewhat indistinguishable in the figure.

Figure 5-3 illustrates how marginal returns change as more money is spent to achieve water savings in AFY in 2050. A cost-effectiveness curve displays the results of the present value of each program's costs versus the cumulative water savings at the end of the planning period. This curve is helpful in determining how far to push the "conservation envelope" as the point of diminishing economic returns is evident. Note that only a slight increase in savings is achieved when graduating from Program B to Program C.

Figure 5-3. Present Value of Utility Costs Versus Water Saved in 2050



5.2 Selected/Recommended Program

The City has been refining its water use efficiency measures since its first conservation plan was published in 1995. Seeing the need for more up-to-date and expansive measures to meet further water use reductions, the City has elected to implement Program B, which includes 17 of the measures modeled in this planning effort and represents a thoroughly robust program with the highest benefit-cost ratio.

The City selected the Recommended Program (Program B) as the most forward-thinking, comprehensive option. Measures that have been analyzed and are included in the Plan are likely to be implemented and more likely to be deemed eligible for funding and outside partnerships. Program B provides the full range of measures, builds goodwill with institutional partners, and provides benefits for all categories of City customers.

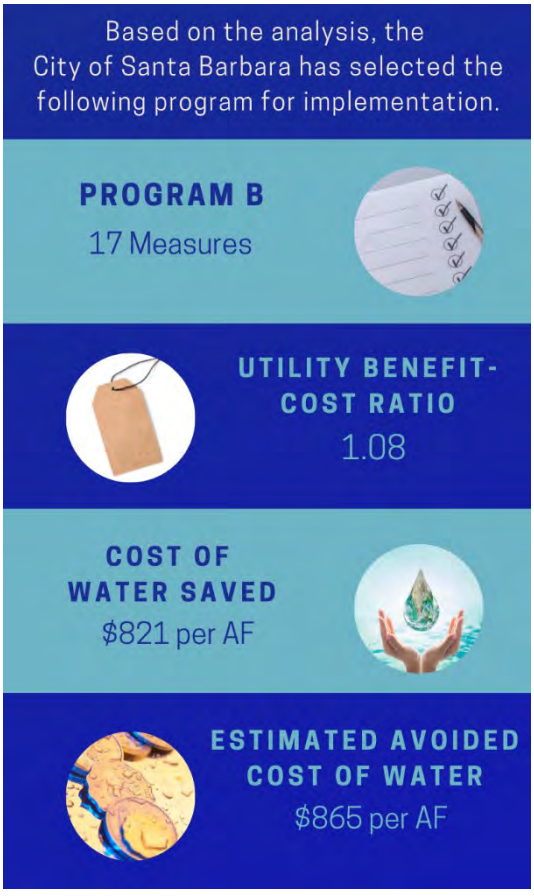
The previous Figure 5-3 shows year 2050 conservation program estimated water savings by implementing Program B, which includes measures required by law and more customer-centric, extended programs in indoor efficiency (rebates for dipper wells, toilets, urinals). In addition, this program includes significant fund matching for high water users to perform institutional retrofits and incentives to install leak detection devices and pressure reduction valves.

6 NEXT STEPS AND CONCLUSIONS

Current conditions have encouraged the City to choose Program B as the Recommended Program for implementation. However, water use is very dynamic and responds to changes in population, economy, weather, efficiency of devices, and types of industry. In the future, as the community evolves and water use patterns and weather change, the City may adjust measure implementation targets and schedules. This may include expanding upon, or scaling back, various program components and measures to increase efficiency, meet benefit-cost ratios, adopt better technology or methods, or meet budget and staffing restrictions. Whether additional measures become necessary would be dependent on several factors, including potential future drought conditions, compliance with the annual aggregate water use objectives as provided by the state, and the City's ability to support new and more innovative programs.

With clearly defined individual conservation measures as well as calculable water saving objectives and customer target goals, the City has quantifiable performance objectives that can be tracked on both an individual conservation measure level and an overall program level.

6.1 Selected Program Estimated Water Savings and Budget



More than 70% of the City's service area water use is associated with residential water use. Consequently, residential conservation programs will produce the most savings. At less than 23% of overall water use, the City's service area does not include extensive commercial activity. Therefore, the conservation potential for the commercial sector is not as high. In conjunction with plumbing codes, the Recommended Program saves 6% of projected demand in 2050. From the utility standpoint, the average cost of water saved for the Recommended Program is $821 per AF, which is less than the avoided cost of water at $865 per AF. Therefore, this program has the potential to reduce per capita water use in a cost-effective manner.

6.2 Implementation

In accordance with the policies of the City's 2011 Long Term Water Supply Plan (LTWSP), ongoing monitoring and reporting of the City's water supply status will be conducted, including annual reports to the City Council and regular five-year updates of the City's Urban Water Management Plan. The next Urban Water Management Plan update is on schedule to be completed in 2021 and will include an update to the LTWSP.

Additionally, progress on the demand management elements of the LTWSP are tracked using the City's Paradise Performance Program (P^3), updates to Water Commission and City Council, and annual BMP reporting to the Bureau of Reclamation.

Future implementation and tracking of demand management measures identified in this plan will be aligned with forthcoming water use targets to be established in accordance with SB 606 and AB 1668.

6.2.1 Tracking and Monitoring

The City will continue to monitor progress and track the level of participation and effectiveness of conservation measures through the following:

- Prepare an annual performance plan in concert with the budget planning process.
- Set up a method to store and manage measure participation, cost, and other data to gauge successes and areas that need improvement.
- Review Plan goals in the DSS Model annually and update measure participation or other elements that are refined through experience.
- Track water use to ensure the Plan is on track to meet water use reduction goals. Use the input from City staff and the annual work planning process as the forum to amend the plan, budget, staffing, contracting, schedule, and so forth to stay on track.

6.3 Next Steps

Next steps in Plan implementation include the following:

- Engage in the state processes to establish the urban water supplier efficiency standards as part of SB 606 and AB 1668. The City will review state documents, submit written comments as needed, and participate in public workshops and stakeholder groups.
- Integrate results of the Plan into the updated LTWSP (currently underway) to inform future water supply policies and strategies. The updated LTWSP is anticipated to be completed in the spring of 2021.
- Review program staff needs and hire staff accordingly to adequately support program needs.
- Prioritize measures for implementation, with the highest priority for implementation given to those that contribute the most to meeting water saving targets and/or can be implemented with relative ease. Key questions to direct action include:
    - What level of support will be required from conservation staff to run the selected measures?
    - What other support is needed (e.g., outsourced support or other sources of funding) or wanted to run these programs?
- Develop implementation plans that describe in detail how to implement each conservation measure.
- Prepare an annual performance metric plan for each Plan year in concert with the budget process.
- Form partnerships and apply for grants where appropriate.
- Continue to collect and analyze measure participation, costs, and other data to gauge successes and areas that need improvement.

6.4 Conclusions

The following is a summary of the water conservation analysis findings:

- Conservation is one of the least expensive means of meeting future water supply needs for the area. The implementation of these conservation measures should reduce per capita water use and has the potential to defer the need for further infrastructure expansion. While the conservation actions identified can have a significant cost, the cost of not participating in conservation and having to address increased demands through engineering solutions may be even higher. Furthermore, with climate change, long-term drought, and environmental restrictions on the delivery of imported water, additional water supplies may not be available to meet future increases in demands without conservation.
- Governor Brown signed SB 606 and AB 1668 into state law to create a more permanent conservation standard as part of implementing the "Making Water Conservation a California Way of Life" legislation. The City should track development of the DWR framework into new state mandates for what is planned for 2021 and beyond and update this Plan as necessary to comply with those new mandates.
- Through the DSS Model analysis, the City identified fixture costs, applicable customer classes, time period of implementation, measure life, administrative costs, end uses, end-use savings per replacement, and a target number or percentage of accounts per program year. This thorough analysis is planned to be used in the 2020 City of Santa Barbara Urban Water Management Plan and additional Santa Barbara planning documents.
- Creating expanded water conservation efforts appears to be a feasible and cost-effective means of:
    - Being more sustainable within existing water supplies;
    - Meeting the water use objectives outlined in SB 606 and AB 1668;
    - Maintaining a program in line with the former CUWCC's Best Management Practices;
    - Measuring, tracking, and reducing non-revenue water losses as outlined in SB 555; and
    - Addressing reduction in water use as previously required by the statewide drought emergency declaration that was recently lifted.
- Based on the analysis, the City has selected to implement Program B, with 17 measures, a utility benefit-cost ratio of 1.08 and a cost of water saved of $821 per AF versus the estimated avoided cost of water at $865 per AF.

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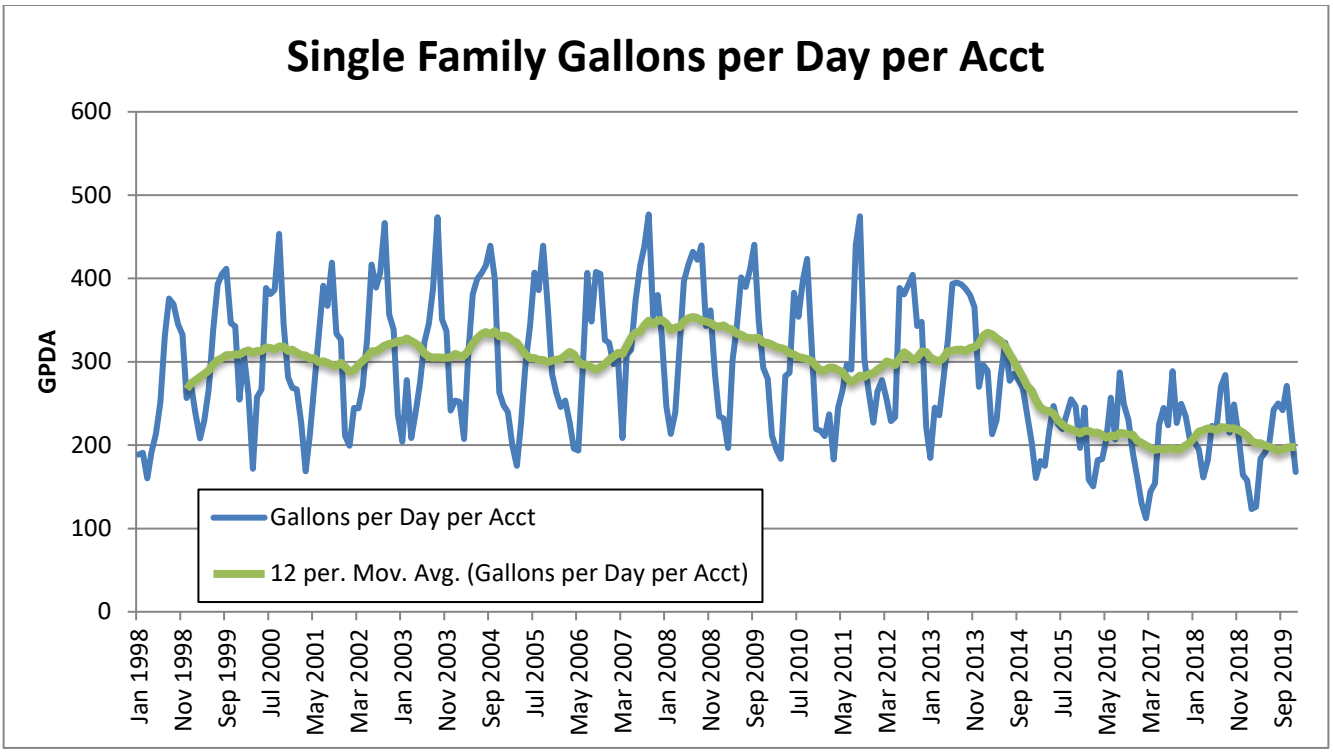
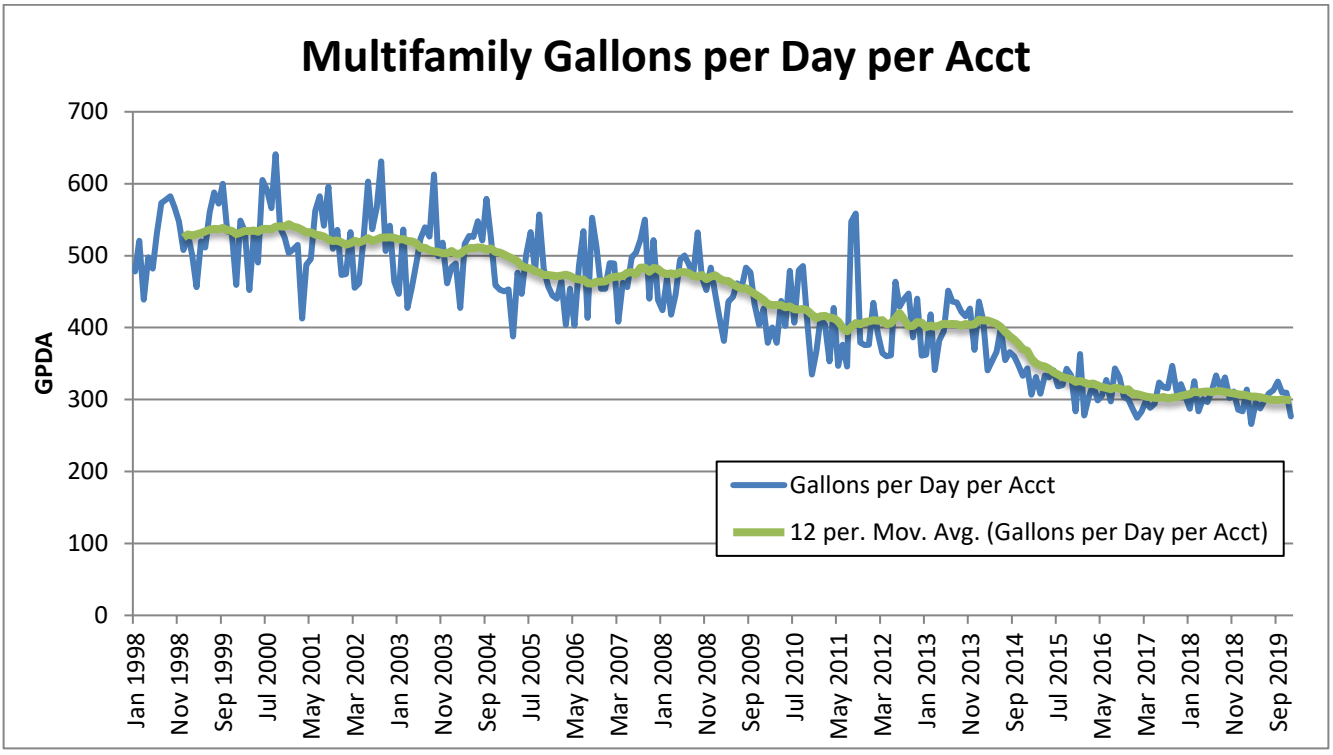
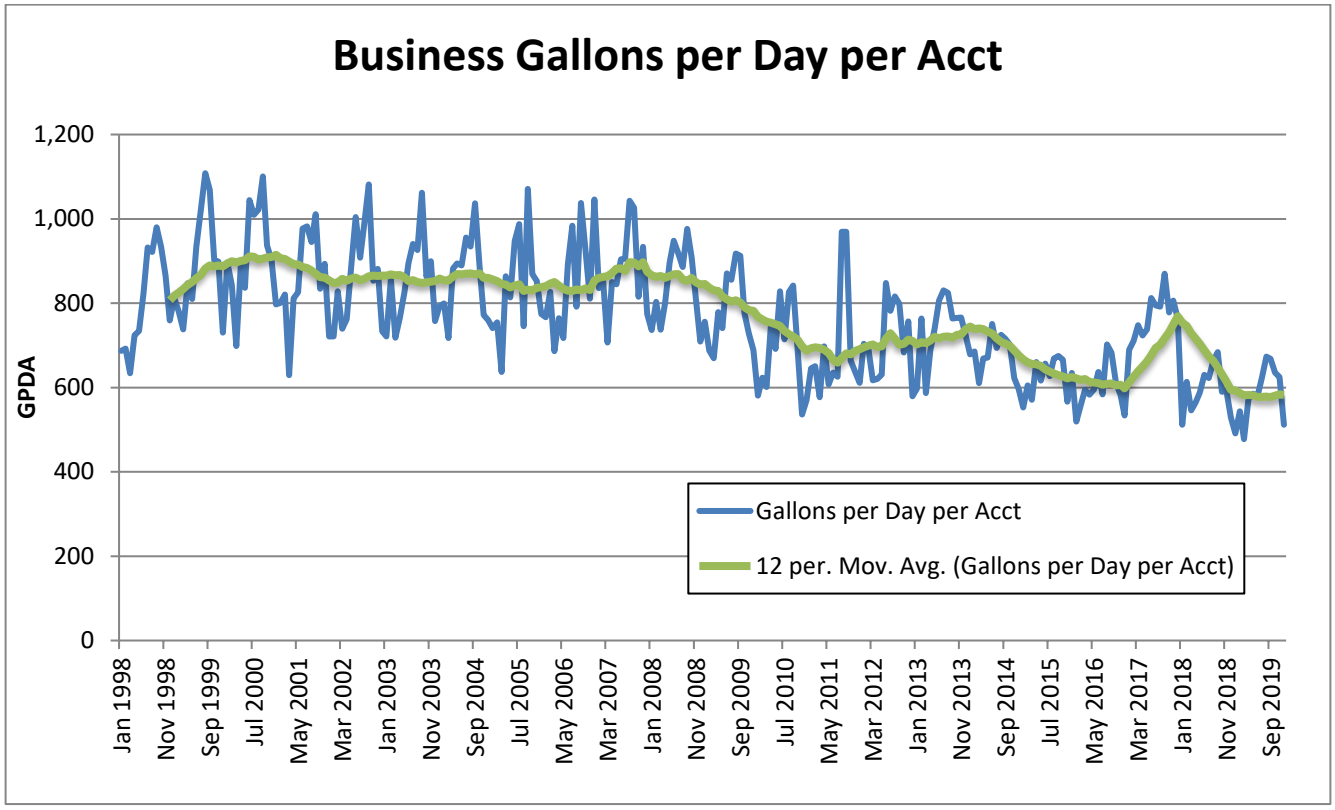
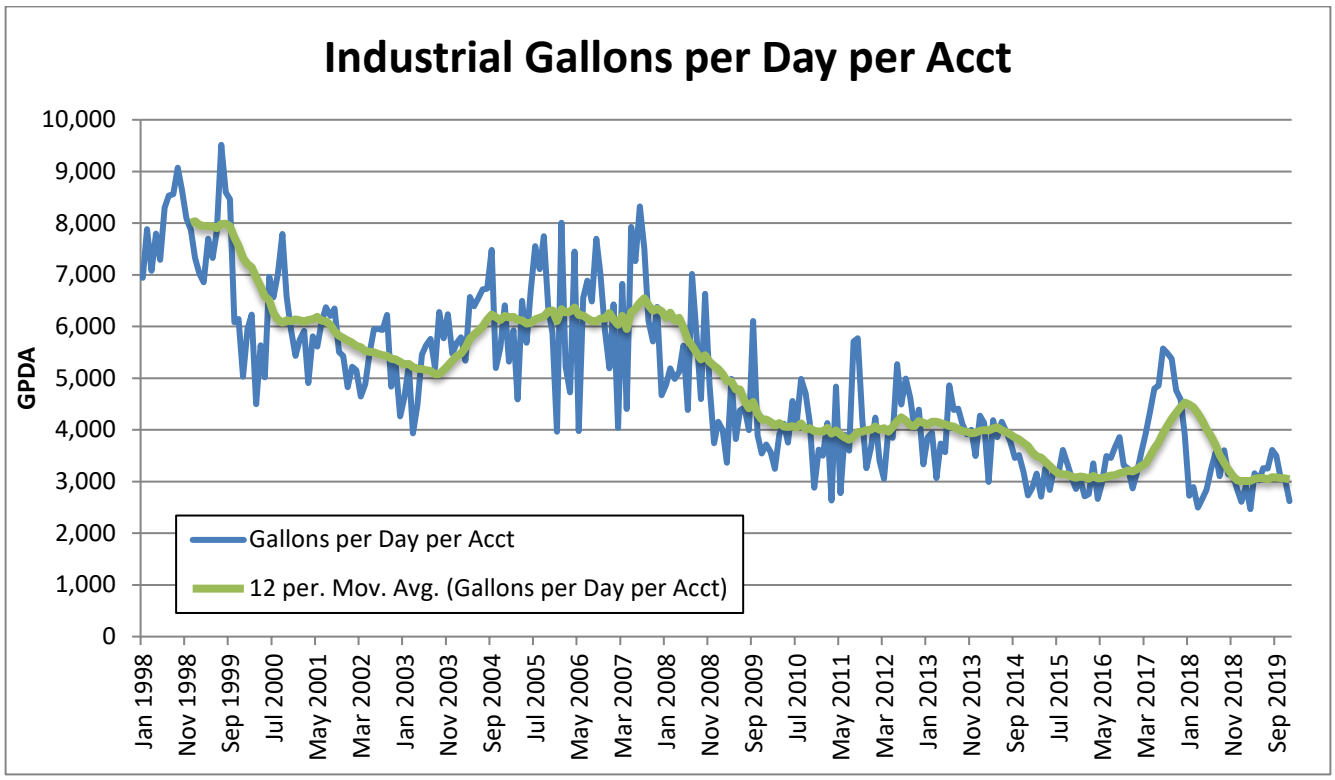
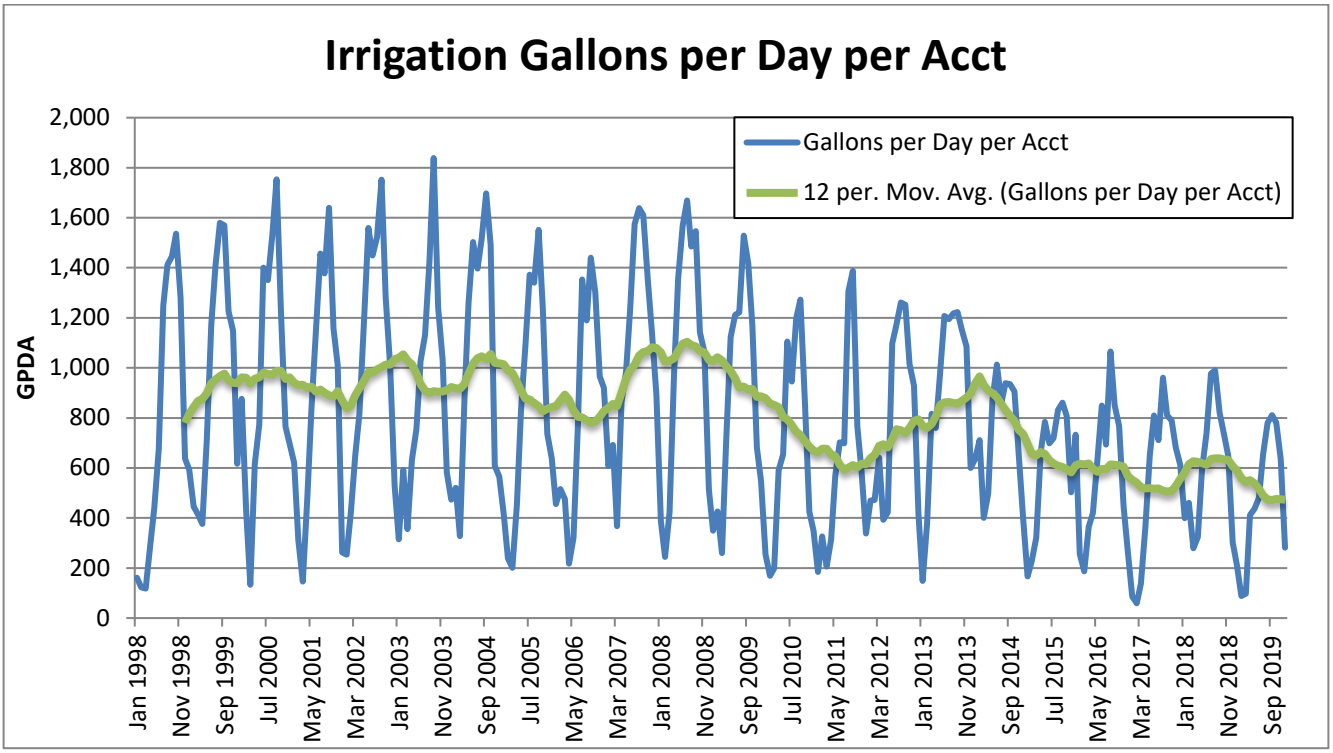
APPENDIX A – HISTORICAL MONTHLY WATER USE PER ACCOUNT TYPE






Business Gallons per Day per Acct
GPDA
1,200
1,000
800
600
400
200
0
Gallons per Day per Acct
12 per. Mov. Avg. (Gallons per Day per Acct)
Jan 1998
Nov 1998
Sep 1999
Jul 2000
May 2001
Mar 2002
Jan 2003
Nov 2003
Sep 2004
Jul 2005
May 2006
Mar 2007
Jan 2008
Nov 2008
Sep 2009
Jul 2010
May 2011
Mar 2012
Jan 2013
Nov 2013
Sep 2014
Jul 2015
May 2016
Mar 2017
Jan 2018
Nov 2018
Sep 2019


Industrial Gallons per Day per Acct
GPDA
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Gallons per Day per Acct
12 per. Mov. Avg. (Gallons per Day per Acct)
Jan 1998
Nov 1998
Sep 1999
Jul 2000
May 2001
Mar 2002
Jan 2003
Nov 2003
Sep 2004
Jul 2005
May 2006
Mar 2007
Jan 2008
Nov 2008
Sep 2009
Jul 2010
May 2011
Mar 2012
Jan 2013
Nov 2013
Sep 2014
Jul 2015
May 2016
Mar 2017
Jan 2018
Nov 2018
Sep 2019


Irrigation Gallons per Day per Acct
GPDA
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Gallons per Day per Acct
12 per. Mov. Avg. (Gallons per Day per Acct)
Jan 1998
Nov 1998
Sep 1999
Jul 2000
May 2001
Mar 2002
Jan 2003
Nov 2003
Sep 2004
Jul 2005
May 2006
Mar 2007
Jan 2008
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Jul 2015
May 2016
Mar 2017
Jan 2018
Nov 2018
Sep 2019

APPENDIX B – DSS MODEL OVERVIEW

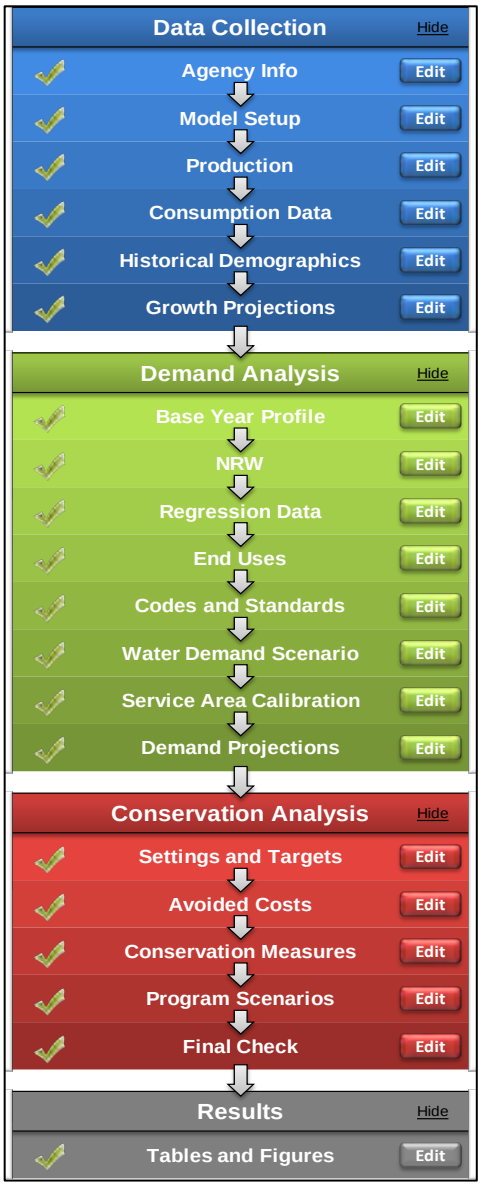


Figure B-1 DSS Model Main Page

DSS Model Overview: The Least Cost Planning Decision Support System Model (DSS Model) is used to prepare long-range, detailed demand projections. The purpose of the extra detail 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.

Originally developed in 1999 and continuously updated, the DSS Model is an "end-use" model that breaks down total water production (water demand in the service area) to specific water end uses, such as plumbing fixtures and appliances. The model uses a bottom-up approach that allows for multiple criteria to be considered when estimating future demands, such as the effects of natural fixture replacement, plumbing codes, and conservation efforts. The DSS Model may also use a top-down approach with a utility-prepared water demand forecast.

Demand Forecast Development and Model Calibration: To forecast urban water demands using the DSS Model, customer demand data is obtained from the water agency being modeled. Demand data is reconciled with available demographic data to characterize water usage for each customer category in terms of number of users per account and per capita water use. 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 is 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 end studies on water use behavior (e.g., flushes per person per day) are not exceeded or drop below reasonable use limits.

Passive Water Savings Calculations: The DSS Model is used to forecast service area water fixture use. Specific end-use type, average water use, and lifetime are compiled for each fixture. Additionally, state and national plumbing codes and appliance standards are modeled by customer category. These fixtures and plumbing codes can be added to, edited, or deleted by the user. This process yields two demand forecasts, one with plumbing codes and one without plumbing codes.

Active Conservation Measure Analysis Using Benefit-Cost Analysis: The DSS Model evaluates active conservation measures using benefit-cost analysis with the present value of the cost of water saved ($/Million Gallons or $/Acre-Feet). Benefits are based on savings in water and wastewater facility operations and maintenance (O&M) and any deferred capital expenditures. The figures on the previous page illustrate the processes for forecasting conservation water savings, including the impacts of fixture replacement due to existing plumbing codes and standards.

Figure B-2. Sample Benefit-Cost Analysis Summary

Conservation Measures

Benefit Cost Analysis

Previo | Conser | AMI | RES | WC | IRR | CIIR | NO | MU | LDS | PRV | LEA | UHE | UHE | TOI | HO | RAI | RAI | SPR | Lan | SCH | GEN | DIP | B/C | Next

Review Data

Benefit Cost Analysis

Benefit Cost Analysis

Util Cost Five Year Start Year: 2020 | Water Savings Year: 2030 | Units: AF

	Measure	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	Five Years of Water Utility Costs 2020-2025	Water Savings in 2030 (afy)	Cost of Savings per Unit Volume ($/af)
AMI	Full AMI Implementation	$3,976,434	$16,635,194	$1,566,069	$5,893,340	2.54	2.82	$320,000	133.764878	$324
RESH	Residential Rebates for HECW	$139,312	$365,447	$95,879	$200,665	1.45	1.82	$50,325	5.124572	$824
WC	Water Checkup	$7,648,165	$30,288,419	$6,005,949	$7,665,564	1.27	3.95	$1,382,995	239.652915	$877
IRREV	Irrigation Evaluations	$1,589,488	$1,589,488	$1,918,184	$4,332,779	0.83	0.37	$443,824	98.051821	$646
CIIRe	CII Water Survey Level 2 and Customized Rebate	$910,720	$3,313,109	$915,904	$2,581,185	0.99	1.28	$193,725	18.753753	$1,055
NOZZ	Free Sprinkler Nozzle Program	$277,886	$277,886	$329,386	$455,933	0.84	0.61	$103,145	23.005687	$680
MULC	Mulch Program	$80,739	$80,739	$287,676	$287,676	0.28	0.28	$66,932	4.554625	$2,000
LDS	Water Conserving Landscape and Irrigation Codes	$1,055,819	$1,055,819	$350,316	$7,979,608	3.01	0.13	$78,568	46.098525	$161
PRV	Pressure Reduction Valve Rebate	$102,170	$193,972	$49,161	$132,223	2.08	1.47	$37,818	8.503521	$425
LEAK	Leak Detection Device Rebate	$174,130	$847,416	$306,843	$1,288,743	0.57	0.66	$80,053	6.065394	$1,895
UHET	Ultra-High Efficiency Toilet Rebate	$538,624	$538,624	$405,529	$761,556	1.33	0.71	$362,736	16.287780	$921

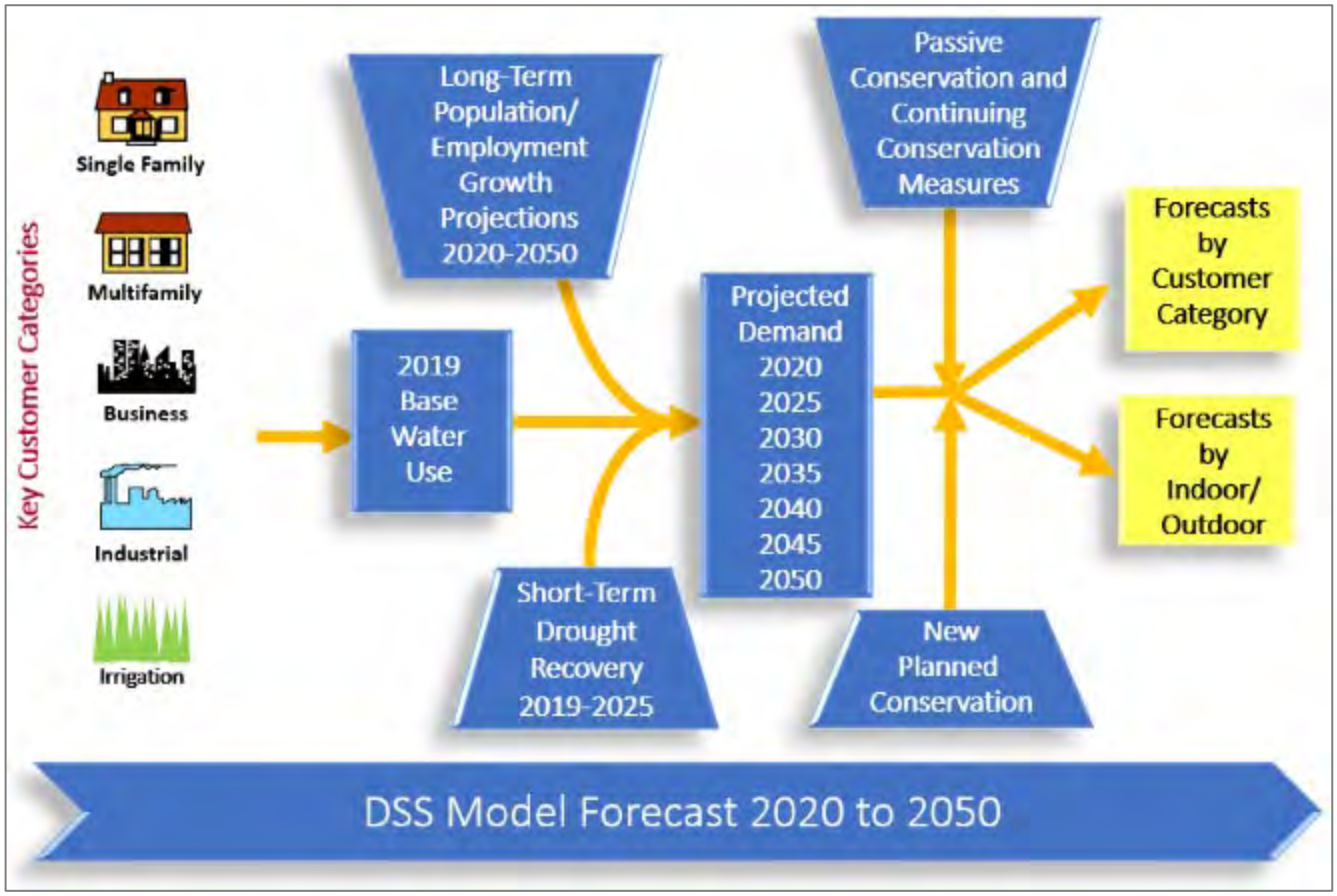
Model Use and Validation: The DSS Model has been used for over 20 years for practical applications of conservation planning in over 300 service areas representing 60 million people, including extensive efforts nationally and internationally in Australia, New Zealand, and Canada.

Figure B-3. DSS Model Analysis Locations in the U.S.

The California Water Efficiency Partnership, or CalWEP (formerly the CUWCC), has peer reviewed and endorsed the model since 2006. It is offered to all CalWEP members for use to estimate water demand, plumbing code, and conservation program savings.

The DSS Model can use one of the following: 1) a statistical approach to forecast demands (e.g., an econometric model); 2) a forecasted increase in population and employment; 3) predicted future demands; or 4) a demand projection entered into the model from an outside source. For the City, baseline demand was developed based on an increase in residential population. The following figure presents the flow of information in the DSS Model Analysis.

Figure B-4. DSS Model Analysis Flow



APPENDIX C – PROJECTED WATER DEMANDS WITH AND WITHOUT PLUMBING CODE SAVINGS

This section presents baseline water demands with and without the plumbing code; details regarding the national and state plumbing codes; and key inputs and assumptions used in the DSS Model, which is used to prepare long-range, detailed demand projections. This rigorous modeling approach is especially important if the project will be subject to regulatory or environmental review.

C.1 Projected Baseline Demand

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. As described in the previous section, baseline customer category water use was determined using 2018–2019 post-drought historical monthly water use. After several demand scenarios were explored, it was determined by City staff that the projected baseline water demand would assume a multi-year drought recovery to bring the 2026 water use to 10% less than the average of 2008–2013 levels. As part of the development of the Enhanced Urban Management Plan, the City reviewed a total of 11 different scenarios. The scenarios included higher and lower population and employment growth rates, drought recovery, and climate change. As a result of the modeling process, it was determined that the effect of drought recovery will likely be the largest impact to Santa Barbara water demands in the coming years.

C.2 Estimated Plumbing Code Savings

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. This approach yields two distinct demand forecasts related to plumbing code savings: 1) with plumbing codes and 2) without plumbing codes. Plumbing code measures are independent of any conservation program and are based on customers following applicable local, state and federal laws, building codes, and ordinances.

Plumbing code-related water savings are considered “passive” and reliable long-term savings and can be depended upon over time to help reduce overall system water demand. In contrast, water savings are considered “active” if a specific action unrelated to the implementation of codes and standards is taken by the water agency to accomplish conservation measure savings (e.g., offering turf replacement rebates). The DSS Model incorporates the following items as a “code,” meaning that the savings are assumed to occur and therefore are “passive” savings:

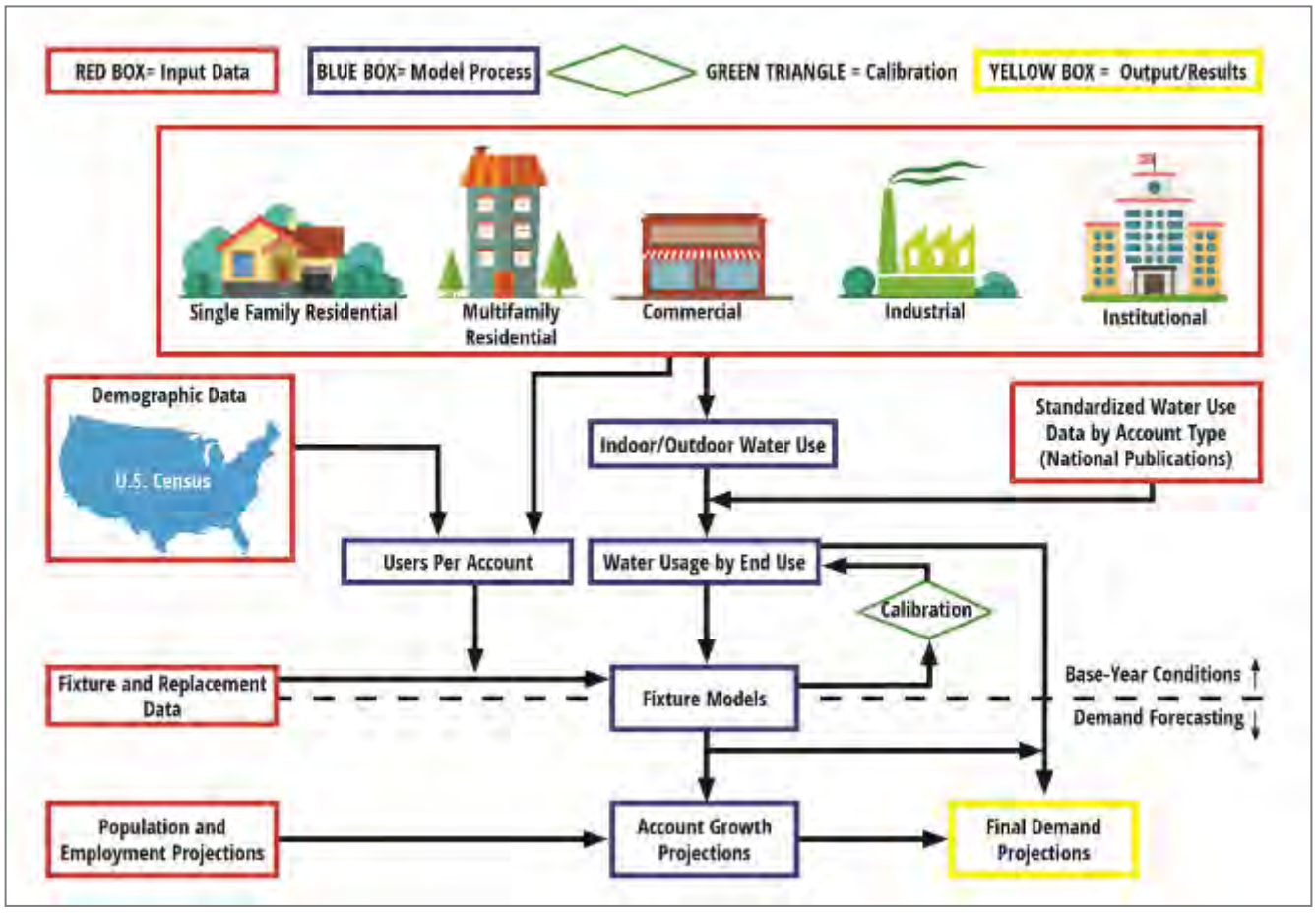
- The Federal Energy Policy Act of 1992 (amended in 2005)
- California Code of Regulations Title 20 California State Law (Assembly Bill 715)
- California State Law Senate Bill 407
- 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations
- 2019 CALGreen Code (effective January 1, 2020)

The following figure conceptually describes how plumbing codes using “fixture models” are incorporated into the flow of information in the DSS Model.[13] The demand projections, including plumbing code savings, further assumes no active involvement by the water utility, and that the costs of purchasing and installing replacement equipment (and new equipment in new construction) are borne solely by the customers, occurring at no direct

[13] Fixture models are used in the DSS Model to track individual plumbing devices and their water savings as they change and become more efficient over time.

utility expense. The inverse of the fixture life is the natural replacement rate expressed as a percent (i.e., 10 years is a rate of 10% per year).

Figure C-1. DSS Model Overview Used to Make Potable Water Demand Projections



The DSS Model makes water demand projections using a multi-level process.

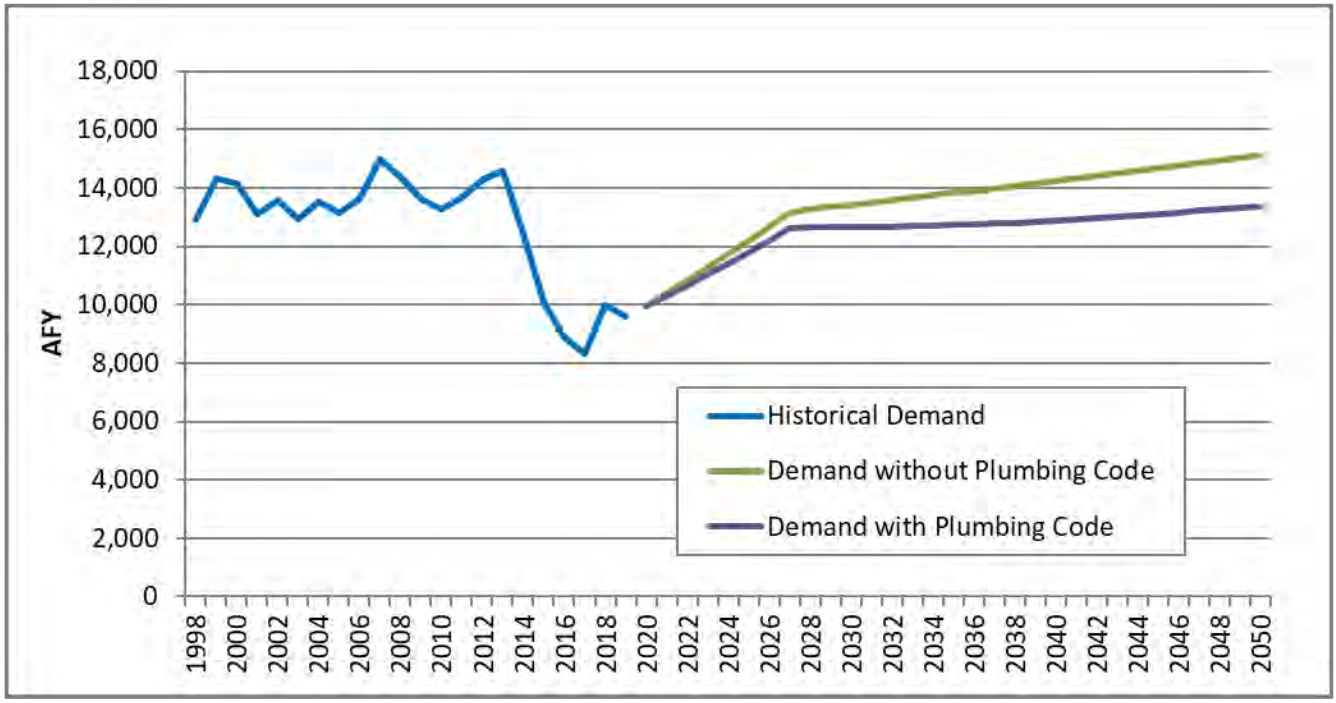
Table C-1 shows the water system demands for the City in acre-feet in 5-year increments over the 31-year modeling period (years 2020-2050). Figure C-2 illustrates demands in graphical format. Both the table and the figure include historical (baseline) demand as well as demand with and without plumbing code.

Table C-1. City of Santa Barbara Potable Water System Demands for Years 2020-2050

AFY	2020	2025	2030	2035	2040	2045	2050
Baseline Demands	9,947	12,187	13,425	13,822	14,236	14,668	15,119
Plumbing Code Savings	-	387	760	1,093	1,352	1,561	1,737
Demands with Plumbing Code Savings	9,947	11,799	12,665	12,729	12,885	13,107	13,382

Note: All numbers in the table are listed in acre-feet/year.

Figure C-2. City of Santa Barbara Potable Water System Demands



C.3 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 pounds per square inch (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, further reducing indoor water demands. 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 this 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 machine 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. Energy Star washing machines have a water factor of 6.0 or less – the equivalent of using 3.1 cubic feet (or 23.2 gallons) of water per load. The maximum water factor for residential clothes washers under current federal standards is 9.5. The water factor equals the number of gallons used per cycle per cubic foot of capacity. Prior to the year 2000, the water factor for a typical new residential clothes washer was about 12. In March 2015, the federal standard reduced the maximum water factor for top- and front-loading machines to 8.4 and 4.7, respectively. In 2018, the maximum water factor for top-loading machines was further reduced to 6.5. For commercial washers, the maximum water factors were reduced in 2010 to 8.5 and 5.5 for top- and front-loading machines, respectively. Beginning in 2015, the maximum water factor for Energy Star certified washers was 3.7 for front-loading and 4.3 for top-loading machines. In 2011, the U.S. Environmental Protection Agency estimated that Energy Star washers comprised more that 60% of the residential market and 30% of the commercial market (Energy Star, 2011). A new Energy Star compliant washer uses about two-thirds less water per cycle than washers manufactured in the 1990s.

C.4 State Plumbing Code

This section describes California state codes applicable to the City's water use.

C.4.1 California State Law – AB 715

Plumbing codes for toilets, urinals, showerheads, and faucets were initially adopted by California in 1991, mandating the sale and use of ultra-low flush toilets (ULFTs) using 1.6 gpf, urinals using 1 gpf, and low-flow showerheads and faucets. AB 715 led to an update to California Code of Regulations Title 20 mandating that all toilets and urinals sold and installed in California as of January 1, 2014 must be high efficiency versions having flush ratings that do not exceed 1.28 gpf (toilets) and 0.5 gpf (urinals).

C.4.2 California State Laws – SB 407 and SB 837

SB 407 addresses plumbing fixture retrofits on resale or remodel. The DSS Model carefully considers the overlap with SB 407, the plumbing code (natural replacement), CALGreen, AB 715 and rebate programs (such as toilet rebates). SB 407 (enacted in 2009) requires that properties built prior to 1994 be fully retrofitted with water conserving fixtures by the year 2017 for single family residential houses and 2019 for multifamily and commercial properties. SB 407 program length is variable and continues until all the older high flush toilets have been replaced in the service area. The number of accounts with high flow fixtures is tracked to make sure that the situation of replacing more high flow fixtures than actually exist does not occur. Additionally, SB 407 conditions issuance of building permits for major improvements and renovations upon retrofit of non-compliant plumbing fixtures. SB 837 (enacted in 2011) requires that sellers of real estate property disclose on their Real Estate Transfer Disclosure Statement whether their property complies with these requirements. Both laws are intended to accelerate the replacement of older, low efficiency plumbing fixtures, and ensure that only high efficiency fixtures are installed in new residential and commercial buildings.

C.4.3 2019 CALGreen and 2015 CA Code of Regulations Title 20 Appliance Efficiency Regulations

Fixture characteristics in the DSS Model are tracked in new accounts, which are subject to the requirements of the 2019 California Green Building Code and 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations adopted by the California Energy Commission (CEC) on September 1, 2015. The CEC 2015 appliance efficiency standards apply to the following new appliances, if they are sold in California: showerheads, lavatory faucets, kitchen faucets, metering faucets, replacement aerators, wash fountains, tub spout diverters, public lavatory faucets, commercial pre-rinse spray valves, urinals, and toilets. The DSS Model accounts for plumbing code savings due to the effects these standards have on showerheads, faucet aerators, urinals, toilets, and clothes washers.

- Showerheads – July 2016: 2.0 gpm; July 2018: 1.8 gpm
- Wall Mounted Urinals – January 2016: 0.125 gpf (pint)
- Lavatory Faucets and Aerator – July 2016: 1.2 gpm at 60 psi
- Kitchen Faucets and Aerator – July 2016: 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi
- Public Lavatory Faucets – July 2016: 0.5 gpm at 60 psi

In summary, the controlling law for **toilets** is Assembly Bill 715, requiring high efficiency toilets of 1.28 gpf sold in California beginning in 2014. The controlling law for wall-mounted urinals is the 2015 CEC efficiency regulations requiring that ultra-high efficiency pint **urinals** (0.125 gpf) be exclusively sold in California beginning January 1, 2016. This is an efficiency progression for urinals from AB 715's requirement of high efficiency (0.5 gpf) urinals starting in 2014.

Standards for **residential clothes washers** fall under the regulations of the U.S. Department of Energy. In 2018, the maximum water factor for standard top-loading machines was reduced to 6.5.

Showerhead flow rates are regulated under the 2015 California Code of Regulations Title 20 Appliance Efficiency Regulations adopted by the CEC, which requires the exclusive sale in California of 2.0 gpm showerheads at 80 psi as of July 1, 2016 and 1.8 gpm showerheads at 80 psi as of July 1, 2018. The WaterSense specification applies to showerheads that have a maximum flow rate of 2.0 gpm or less. This represents a 20% reduction in showerhead flow rate over the current federal standard of 2.5 gpm, as specified by the Energy Policy Act of 1992.

Faucet flow rates likewise have been regulated by the 2015 CEC Title 20 regulations. This standard requires that the residential faucets and aerators manufactured on or after July 1, 2016 be exclusively sold in California at 1.2 gpm at 60 psi; and public lavatory and kitchen faucets/aerators sold or offered for sale on or after July 1, 2016 be 0.5 gpm at 60 psi and 1.8 gpm at 60 psi (with optional temporary flow of 2.2 gpm), respectively. Previously, all faucets had been regulated by the 2010 California Green Building Code at 2.2 gpm at 60 psi.

C.5 Key Baseline Potable Demand Inputs, Passive Savings Assumptions, and Resources

The following table presents the key assumptions and references that are used in the DSS Model in determining projected demands with plumbing code savings.

Table C-2. List of Key Assumptions

Parameter	Model Input Value, Assumptions, and Key References				
Model Start Year for Analysis	2020				
Water Demand Factor Year (Base Year)	2018-2019				
Population Projection Source	2015 UWMP				
Employment Projection Source	Employment Development Department, Labor Market Information Division, published 2019.				
Avoided Cost of Water	* $865/AF average water production cost. Water production cost based on 2019 generated drought supplies and cost including the following supply sources: Cachuma, Gibraltar/Mission Tunnel, Cachuma Carryover/MWD, Groundwater, State Water, Banked Water/ Water Purchases, Existing Desalination, Expanded Desalination. * $1,017/AF average wastewater cost based on FY 2017 costs provided by Todd Heldoorn, WW Treatment Superintendent.				
Potable Water System Base Year Water Use Profile					
Customer Categories	**Start Year Accounts**	**Total Water Use Distribution**	**Demand Factors (gpd/acct)**	**Indoor Use %**	**2020 Residential Indoor Water Use (GPCD)**
Single Family	16,925	45%	212	67%	55
Multifamily	7,099	27%	309	92%	39
Business	2,694	20%	603	86%	N/A
Industrial	54	2%	3,140	93%	N/A
Irrigation	855	6%	553	0%	N/A
Total/Avg	**27,627**	**100%**	**N/A**	**74%**	**N/A**

Table C-3. Key Assumptions Resources

Parameter	Resource
Residential End Uses	Key Reference: CA DWR Report "California Single Family Water Use Efficiency Study," (DeOreo, 2011 – Page 28, Figure 3: Comparison of household end-uses) and AWWA Research Foundation (AWWARF) Report "Residential End Uses of Water, Version 2 - 4309" (DeOreo, 2016). Table 2-A. Water Consumption by Water-Using Plumbing Products and Appliances - 1980-2012. PERC Phase 1 Report. Plumbing Efficiency Research Coalition. 2013. http://www.map-testing.com/content/info/menu/perc.html Model Input Values are found in the "End Uses" section of the DSS Model on the "Breakdown" worksheet.
Non-Residential End Uses, percent	Key Reference: AWWARF Report "Commercial and Institutional End Uses of Water" (Dziegielewski, 2000 – Appendix D: Details of Commercial and Industrial Assumptions, by End Use). Santa Clara Valley Water District Water Use Efficiency Unit. "SCVWD CII Water Use and Baseline Study." February 2008. Model Input Values are found in the "End Uses" section of the DSS Model on the "Breakdown" worksheet.
Efficiency Residential Fixture Current Installation Rates	U.S. Census, Housing age by type of dwelling plus natural replacement plus rebate program (if any). Key Reference: GMP Research, Inc. (2019). 2019 U.S. WaterSense Market Penetration Industry Report. Key Reference: Consortium for Efficient Energy (www.cee1.org). Model Input Values are found in the "Codes and Standards" green section of the DSS Model by customer category fixtures.
Water Savings for Fixtures, gal/capita/day	Key Reference: AWWARF Report "Residential End Uses of Water, Version 2 - 4309" (DeOreo, 2016). Key Reference: 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. Key Reference: California Energy Commission, Staff Analysis of Toilets, Urinals and Faucets, Report # CEC-400-2014-007-SD, 2014. Model Input Values are found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model.
Non-Residential Fixture Efficiency Current Installation Rates	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. California Energy Commission, Staff Analysis of Toilets, Urinals and Faucets, Report # CEC-400-2014-007-SD, 2014. Santa Clara Valley Water District Water Use Efficiency Unit. "SCVWD CII Water Use and Baseline Study." February 2008. Model Input Values are found in the "Codes and Standards" green section of the DSS Model by customer category fixtures.

Parameter	Resource
Residential Frequency of Use Data, Toilets, Showers, Faucets, Washers, Uses/user/day	Key Reference: AWWARF Report "Residential End Uses of Water, Version 2 - 4309" (DeOreo, 2016). Summary values can be found in the full report: http://www.waterrf.org/Pages/Projects.aspx?PID=4309 Key Reference: California Energy Commission, Staff Analysis of Toilets, Urinals and Faucets, Report # CEC-400-2014-007-SD, 2014. Key Reference: Alliance for Water Efficiency, The Status of Legislation, Regulation, Codes & Standards on Indoor Plumbing Water Efficiency, January 2016. 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.
Non-Residential Frequency of Use Data, Toilets, Urinals, and Faucets, Uses/user/day	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). Key Reference: California Energy Commission, Staff Analysis of Toilets, Urinals and Faucets, Report # CEC-400-2014-007-SD, 2014. Fixture uses over a 5-day work week are prorated to 7 days. Non-residential 0.5gpm faucet standards per Table 2-A. Water Consumption by Water-Using Plumbing Products and Appliances - 1980-2012. PERC Phase 1 Report. Plumbing Efficiency Research Coalition, 2012. http://www.map-testing.com/content/info/menu/perc.html 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.
Natural Replacement Rate of Fixtures (percent per year)	Residential Toilets 2%-4%
	Non-Residential Toilets 2%-3%
	Residential Showers 4% (corresponds to 25-year life of a new fixture)
	Residential Clothes Washers 10% (based on 10-year washer life). Key References: "Residential End Uses of Water" (DeOreo, 2016) and "Bern Clothes Washer Study, Final Report" (Oak Ridge National Laboratory, 1998).
	Residential Faucets 10% and Non-Residential Faucets 6.7% (every 15 years). CEC uses an average life of 10 years for faucet accessories (aerators). A similar assumption can be made for public lavatories, though no hard data exists and since CII fixtures are typically replaced less frequently than residential, 15 years is assumed. CEC, Analysis of Standards Proposal for Residential Faucets and Faucet Accessories, a report prepared under CEC's Codes and Standards Enhancement Initiative, Docket #12-AAER-2C, August 2013.
	Model Input Value is found in the "Codes and Standards" green section on the "Fixtures" worksheet of the DSS Model.
Residential Future Water Use	Increases Based on Population Growth and Demographic Forecast
Non-Residential Future Water Use	Increases Based on Employment Growth and Demographic Forecast

C.5.1 Fixture Estimates

Determining the current level of efficient fixtures in a service area while evaluating passive savings in the DSS Model is part of the standard process and is called "initial fixture proportions." MWM reconciled water efficient fixtures and devices installed within the City of Santa Barbara service area and estimated the number of outstanding inefficient fixtures.

MWM used the DSS Model to perform a saturation analysis for toilets, urinals, showerheads, faucets, and clothes washers. The process included a review of age of buildings from census data, number of rebates per device, and assumed natural replacement rates. MWM presumed the fixtures that were nearing saturation and worth analysis would include residential toilets and residential clothes washers, as both have been included in recommended conservation practices for over two decades.

In 2014, the Water Research Foundation updated its 1999 Residential End Uses of Water Study (REUWS). Water utilities, industry regulators, and government planning agencies consider it the industry benchmark for single family home indoor water use. This Plan incorporates recent study results which reflect the change to the profile of water use in residential homes including adoption of more water efficient fixtures over the 15 years that transpired from 1999 to 2014. REUWS results were combined with City historical rebate and billing data to enhance and verify assumptions made for all customer accounts, including saturation levels on the above-mentioned plumbing fixtures.

The DSS Model presents the estimated current and projected proportions of these fixtures by efficiency level within the City's service area. These proportions were calculated by:

- Using standards in place at the time of building construction;
- Taking the initial proportions of homes by age (corresponding to fixture efficiency levels);
- Adding the net change due to natural replacement; and
- Adding the change due to rebate measure minus the "free rider effect".[14]

Further adjustments were made to initial proportions to account for the reduction in fixture use due to lower occupancy and based on field observations. The projected fixture proportions do **not** include any future active conservation measures implemented by the City. More information about the development of initial and projected fixture proportions can be found in the DSS Model "Codes and Standards" section.

The DSS Model is capable of modeling multiple types of fixtures, including fixtures with different designs. For example, currently toilets can be purchased that flush at a rate of 0.8 gallons per flush (gpf), 1.0 gpf or 1.28 gpf. The 1.6 gpf and higher 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 fixture replacement rates to determine what type of fixture should be used for a new construction installation or replacement. The replacement of the fixtures is listed as a percentage within the DSS Model. A value of 100% would indicate that all the toilets installed 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. All the Fixture Model information and assumptions were carefully reviewed and accepted by City staff.

The DSS Model provides inputs and analysis of the number, type, and replacement rates of fixtures for each customer category (e.g., single family toilets, commercial toilets, residential clothes washing machines). For example, the DSS Model incorporates the effects of the 1992 Federal Energy Policy Act and AB 715 on toilet fixtures. A DSS Model feature determines the "saturation" of 1.6 gpf toilets as the 1992 Federal Energy Policy Act was in effect from 1992-2014 for 1.6 gpf toilet replacements. AB 715 now applies for the replacement of toilets at 1.28 gpf. Further consideration and adjustments were made to replacement rates to account for the reduction in fixture use and wear, due to lower occupancy and based on field observations.

[14] It is important to note that in water conservation program management the "free rider effect" occurs when a customer applies for and receives a rebate on a targeted high efficiency fixture that they would have purchased even without a rebate. In this case, the rebate was not the incentive for their purchase but a "bonus." Rebate measures are designed to target customers needing financial incentive to install the more efficient fixture.

APPENDIX D – DSS MODEL MEASURE ANALYSIS, METHODOLOGY, PERSPECTIVES, AND ASSUMPTIONS

Throughout the planning process, the City of Santa Barbara and MWM conducted more than 20 meetings, primarily in an effort to complete the DSS Model, which is robust for each of the 21 measures modeled. In the model, the City identified fixture costs, applicable customer classes, time period of implementation, measure life, administrative costs, end uses, end-use savings per replacement, and a target number or percentage of accounts per program year. The robust analysis is planned to be used in further Santa Barbara planning documents such as the 2020 City of Santa Barbara Urban Water Management Plan.

D.1 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; and so forth. 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. Essentially, the market penetration goal identifies how many fixtures, rebates, surveys, and so forth that the wholesale customer would have to offer or conduct over time to reach its water savings goal for that conservation measure. This is often expressed in terms of the number of fixtures, rebates, or surveys offered or conducted per year.

The potential for error in market penetration goal estimates for each measure can be significant because the estimates are based on previous experience, chosen implementation methods, projected utility effort, and funds allocated to implement the measure. The potential error can be corrected through reevaluation of the measure as the implementation of the measure progresses. For example, if the market penetration required to achieve specific water savings turns out to be different 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.

The City is constantly examining when a measure might reach saturation. Baseline surveys are the best approach to having the most accurate information on market saturation. This was considered 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 the City regarding what the saturation best estimates were within its service area.

D.2 Present Value Analysis and 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 using the DSS Model, which calculates the 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.

Present value analysis using present day 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, 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 is defined to include 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 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 aggregate for reasons described previously. 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 over 30 years is often used because costs and benefits that occur beyond these 30 years (beyond the year 2050 in this Plan) 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 first year in the DSS Model (the base 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%).

The formula to calculate the real interest rate is:

(nominal interest rate – assumed rate of inflation) / (1 + assumed rate of inflation)

Cash flows discounted in this manner are herein referred to as "Present Value" sums.

D.3 Measure Cost and Water Savings Assumptions

Appendix E presents more detail on the assumptions and inputs used in the City'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 are found to be

adequate for each individual measure. The values in most 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 the City. Costs may include incentive costs, usually determined on a per-participant basis; fixed costs, such as marketing; variable costs, such as the cost 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 are used in marketing the measure. Measure costs are estimated each year through 2050. 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 water use conservation measures evaluated herein generally take effect over a long span of time. This span is sufficient to enable timely rate adjustments, if necessary, to meet fixed cost obligations and savings on variable costs such as energy and chemicals.

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 for 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

Data necessary to forecast water savings of measures include specifics 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 3–10 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 to be how long water use conservation 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 behavior-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 the new homeowners may have less efficient water using practices). Surveys typically have a measure life on the order of five years.

APPENDIX E – INDIVIDUAL CONSERVATION MEASURE DESIGN INPUTS AND RESULTS

Full AMI Implementation - Online Water Use Software and Leak Detection Customer Notification

Overview

Name	Full AMI Implementation - Online Water Use Softw
Abbr	AMI
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2021
Last Year	2050
Measure Length	30

Measure Life

Permanent	
Years	15
Repeat	

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$0.00	$150.00	1
MF	$0.00	$150.00	1
BUS	$0.00	$150.00	1
IND	$0.00	$150.00	1
IRR	$0.00	$150.00	1

Administration Costs

Method: Fixed

Annual Admin Costs	$80,000

Description

Full AMI implementation cost for the meter transmitting units, radio or cellular network, and meter data mgmt. software. Measure includes customer leak notification via online water consumption software, phone or e-mail. Measure will be as automated as possible.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☑	☑	☑	☑	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☑	☑	☑	☑	☑
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> AMI expected be online by summer 2022, 1.5 years to implement and integrate once start. Assume 90% of meter endpoints online in 2021 and the remaining 10% in 2022. Assume 1% are replaced annually with a remaining 85% replaced every 15 years.
> Savings based on significant reductions to leakage and irrigation end uses. Savings based on SFPUC case study per Julie Ortiz ppt at 2019 Peer-to-Peer "AMI: Everything you need to know to run a successful program." Savings are estimated to be 20%-50% on leakage (internal and external) with a potential additional 5% savings on all other end uses due to behavioral changes.
> Design based on City of Santa Barbara AMI Business Case June 2015. AMI effort includes fixed or cellular network & meter data management software and meter transmitting unit purchase and installation.
> Staffing/admin costs for the conservation program group for this measure is estimated to be ~$80,000 for part time staff to work full time.
> Customer costs represent average cost to address identified leaks.
> AMI Business Case: www.santabarbaraca.gov/SBdocuments/Advisory_Groups/Water_Commission/Archive/CY_2015_Archives/03_Staff_Reports/2015-10-12_October_12_15_Item_6_Attachment_Automated_Mettering_Infrastructure_Business_Case.pdf
> Savings life roughly based on meter replacement schedule

Results

Units: AF

Average Water Savings (afy)	154.475149
Lifetime Savings - Present Value ($)	
Utility	$3,950,836
Community	$16,562,254
Lifetime Costs - Present Value ($)	
Utility	$1,566,069
Community	$5,857,952
Benefit to Cost Ratio	
Utility	2.52
Community	2.83
Cost of Savings per Unit Volume ($/af)	
Utility	$327

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
BUS Internal Leakage	20.0%	51.7
BUS Irrigation	5.0%	74.1
BUS External Leakage	20.0%	6.0
SF Internal Leakage	20.0%	19.9
MF Internal Leakage	20.0%	21.5
SF Irrigation	5.0%	55.8
MF Irrigation	5.0%	19.3
IRR Irrigation	5.0%	514.5
SF External Leakage	20.0%	3.5
MF External Leakage	20.0%	1.6
IRR External Leakage	20.0%	38.7
IND External Leakage	20.0%	15.4
IND Internal Leakage	20.0%	248.2
IND Irrigation	5.0%	204.4

Targets

Target Method: Percentage

% of Accts Targeted / yr	5.000%
Only Effects New Accts	

Costs

View: Utility Detail

	Fixture Cost	Admin Costs	Util Total
2020	$0	$0	$0
2021	$0	$80,000	$80,000
2022	$0	$80,000	$80,000
2023	$0	$80,000	$80,000
2024	$0	$80,000	$80,000
2025	$0	$80,000	$80,000
2026	$0	$80,000	$80,000
2027	$0	$80,000	$80,000
2028	$0	$80,000	$80,000
2029	$0	$80,000	$80,000
2030	$0	$80,000	$80,000
2031	$0	$80,000	$80,000
2032	$0	$80,000	$80,000
2033	$0	$80,000	$80,000
2034	$0	$80,000	$80,000
2035	$0	$80,000	$80,000
2036	$0	$80,000	$80,000
2037	$0	$80,000	$80,000
2038	$0	$80,000	$80,000
2039	$0	$80,000	$80,000
2040	$0	$80,000	$80,000
2041	$0	$80,000	$80,000
2042	$0	$80,000	$80,000
2043	$0	$80,000	$80,000
2044	$0	$80,000	$80,000
2045	$0	$80,000	$80,000
2046	$0	$80,000	$80,000
2047	$0	$80,000	$80,000
2048	$0	$80,000	$80,000
2049	$0	$80,000	$80,000
2050	$0	$80,000	$80,000

Targets

View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	0	0	0	0	0	0
2021	847	358	136	3	43	1,387
2022	849	360	138	3	44	1,394
2023	850	363	140	3	44	1,400
2024	851	365	142	3	45	1,406
2025	852	368	143	3	45	1,412
2026	854	371	145	3	46	1,418
2027	855	373	147	3	47	1,425
2028	856	376	149	3	47	1,431
2029	857	378	151	3	48	1,437
2030	859	381	153	3	48	1,444
2031	859	384	155	3	49	1,449
2032	859	386	156	3	50	1,455
2033	860	389	158	3	50	1,460
2034	860	392	160	3	51	1,466
2035	860	394	162	3	52	1,472
2036	861	397	164	3	52	1,478
2037	861	399	167	3	53	1,483
2038	862	402	169	3	54	1,489
2039	862	405	171	3	54	1,495
2040	862	407	173	3	55	1,501
2041	863	410	175	4	56	1,507
2042	863	412	177	4	56	1,512
2043	863	415	179	4	57	1,518
2044	864	418	182	4	58	1,524
2045	864	420	184	4	58	1,530
2046	864	423	186	4	59	1,537
2047	865	426	189	4	60	1,543
2048	865	428	191	4	61	1,549
2049	866	431	193	4	61	1,555
2050	866	433	196	4	62	1,561

Water Savings

Units: afy

	Total Savings (afy)
2020	0.000000
2021	12.988120
2022	26.052067
2023	39.192468
2024	52.409362
2025	65.705192
2026	79.078810
2027	92.531478
2028	106.063865
2029	119.676648
2030	133.370514
2031	147.139135
2032	160.983215
2033	174.903466
2034	188.900610
2035	202.975376
2036	204.140383
2037	205.308674
2038	206.480378
2039	207.655626
2040	208.834551
2041	210.017286
2042	211.203967
2043	212.394733
2044	213.589723
2045	214.789077
2046	215.993960
2047	217.222516
2048	218.456832
2049	219.703236
2050	220.961699

Residential Rebates for HECW

Overview	
Name	Residential Rebates for HECW
Abbr	RESHECW
Category	Default
Measure Type	Standard Measure

Time Period	
First Year	2020
Last Year	2030
Measure Length	11

Measure Life	
Permanent	☑

Fixture Cost per Device	Utility	Customer	Fix/Acct
SF	$150.00	$200.00	1
MF	$150.00	$200.00	1

Administration Costs	
Method:	Percent
Markup Percentage	22%

Description

Rebate for a high efficiency clothes washer. Only applicable on eligible models and for replacing an existing high-water using washer.

Customer Classes	SF	MF	BUS	IND	IRR
	☑	☑	☐	☐	☐

End Uses	SF	MF	BUS	IND	IRR
Toilets	☐	☐			
Urinals					
Lavatory Faucets	☐	☐			
Showers	☐	☐			
Dishwashers	☐	☐			
Clothes Washers	☑	☑			
Process					
Kitchen Spray Rinse					
Internal Leakage	☐	☐			
Baths	☐	☐			
Other	☐	☐			
Irrigation	☐	☐			
Pools	☐	☐			
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐			
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐			

Comments

> Assume 50 rebates/yr SFR accounts and 5/yr MFR accounts.
>According to their website, ENERGY STAR certified clothes washers use about 45% less water than regular washers (assumes 23 gallon per load is reduced to 13 gallon per load). Since only 1 of 4 MF units is expected to replace their washer, assume 25% of the 45% savings.
> Admin cost per SB paying CalWEP for their admin of the program approx. $33.44 per fixture (rebate).

Results	
Units	AF
Average Water Savings (afy)	
	3.228164
Lifetime Savings - Present Value ($)	
Utility	$121,695
Community	$319,234
Lifetime Costs - Present Value ($)	
Utility	$80,689
Community	$168,874
Benefit to Cost Ratio	
Utility	1.51
Community	1.89
Cost of Savings per Unit Volume ($/af)	
Utility	$806

End Use Savings Per Replacement		
Method:	Percent	
	% Savings/Acct	Avg GPD/Acct
SF Clothes Washers	45.0%	21.4
MF Clothes Washers	11.3%	51.5

Targets	
Target Method:	Detailed
Enter Annual Targets Below	

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$8,250	$1,815	$10,065
2021	$8,250	$1,815	$10,065
2022	$8,250	$1,815	$10,065
2023	$8,250	$1,815	$10,065
2024	$8,250	$1,815	$10,065
2025	$8,250	$1,815	$10,065
2026	$8,250	$1,815	$10,065
2027	$8,250	$1,815	$10,065
2028	$8,250	$1,815	$10,065
2029	$0	$0	$0
2030	$0	$0	$0
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

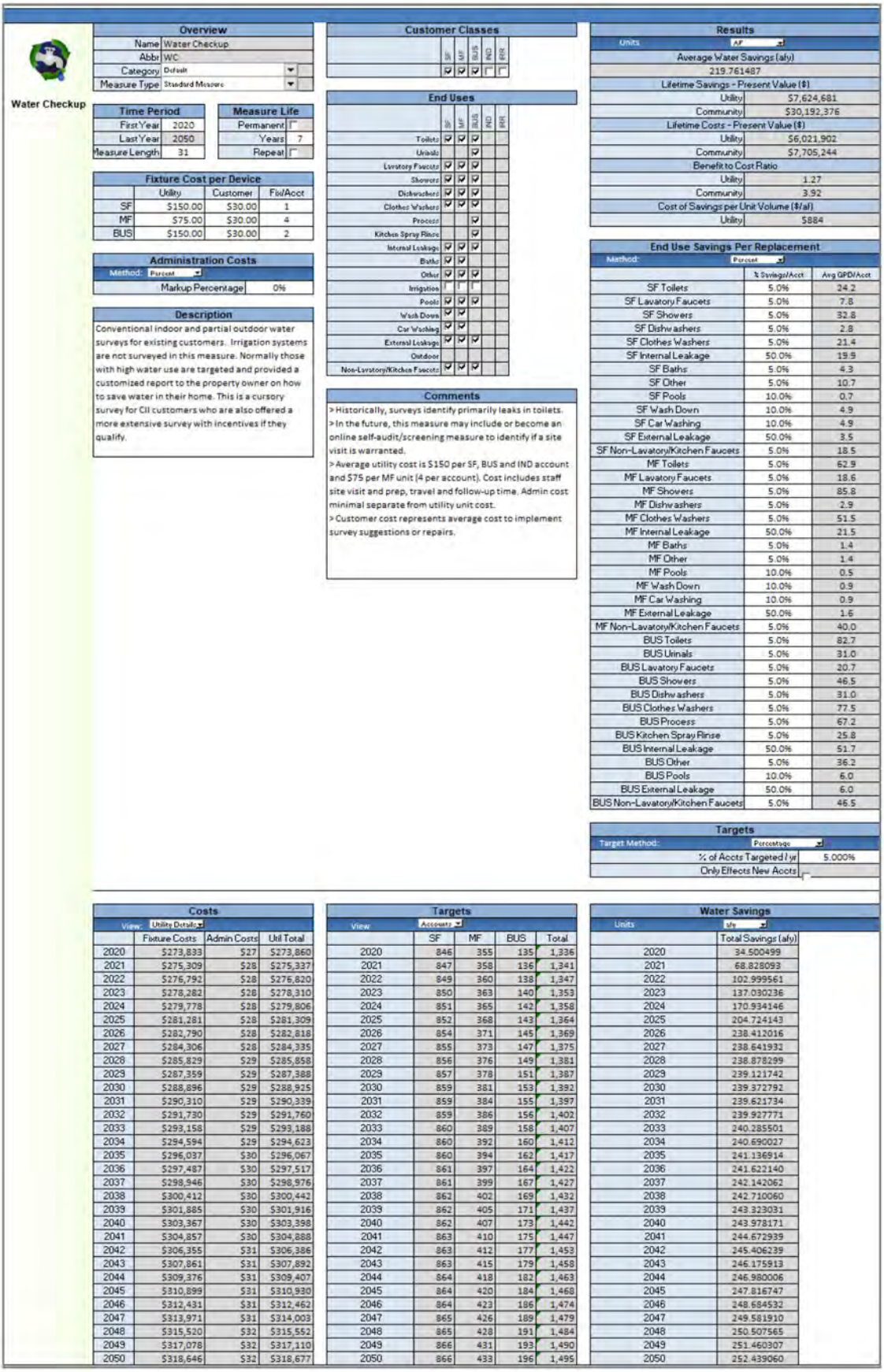
View: Accounts

	SF	MF	Total
2020	50	5	55
2021	50	5	55
2022	50	5	55
2023	50	5	55
2024	50	5	55
2025	50	5	55
2026	50	5	55
2027	50	5	55
2028	50	5	55
2029	0	0	0
2030	0	0	0
2031	0	0	0
2032	0	0	0
2033	0	0	0
2034	0	0	0
2035	0	0	0
2036	0	0	0
2037	0	0	0
2038	0	0	0
2039	0	0	0
2040	0	0	0
2041	0	0	0
2042	0	0	0
2043	0	0	0
2044	0	0	0
2045	0	0	0
2046	0	0	0
2047	0	0	0
2048	0	0	0
2049	0	0	0
2050	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.550382
2021	1.093213
2022	1.625290
2023	2.143847
2024	2.646494
2025	3.131174
2026	3.596115
2027	4.032059
2028	4.435684
2029	4.323741
2030	4.201409
2031	4.070860
2032	3.953463
2033	3.847892
2034	3.752956
2035	3.667583
2036	3.590809
2037	3.521767
2038	3.459679
2039	3.403844
2040	3.353632
2041	3.308477
2042	3.267868
2043	3.231348
2044	3.198506
2045	3.168970
2046	3.142408
2047	3.118520
2048	3.097037
2049	3.077717
2050	3.060341



Water Checkup

Overview

Name	Water Checkup
Abbr	WC
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	☐
Years	7
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$150.00	$30.00	1
MF	$75.00	$30.00	4
BUS	$150.00	$30.00	2

Administration Costs

Method: Percent

Markup Percentage	0%

Description

Conventional indoor and partial outdoor water surveys for existing customers. Irrigation systems are not surveyed in this measure. Normally those with high water use are targeted and provided a customized report to the property owner on how to save water in their home. This is a cursory survey for CII customers who are also offered a more extensive survey with incentives if they qualify.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☐	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☑	☑	☑		
Urinals			☑		
Lavatory Faucets	☑	☑	☑		
Showers	☑	☑	☑		
Dishwashers	☑	☑	☑		
Clothes Washers	☑	☑	☑		
Process			☑		
Kitchen Spray Rinse			☑		
Internal Leakage	☑	☑	☑		
Baths	☑	☑			
Other	☑	☑	☑		
Irrigation	☐	☐	☐		
Pools	☑	☑	☑		
Wash Down	☑	☑			
Car Washing	☑	☑			
External Leakage	☑	☑	☑		
Outdoor					
Non-Lavatory/Kitchen Faucets	☑	☑	☑		

Comments

> Historically, surveys identify primarily leaks in toilets.
> In the future, this measure may include or become an online self-audit/screening measure to identify if a site visit is warranted.
> Average utility cost is $150 per SF, BUS and IND account and $75 per MF unit (4 per account). Cost includes staff site visit and prep, travel and follow-up time. Admin cost minimal separate from utility unit cost.
> Customer cost represents average cost to implement survey suggestions or repairs.

Results

Units: AF

Average Water Savings (afy)	
219.761487	
Lifetime Savings - Present Value ($)	
Utility	$7,624,681
Community	$30,192,376
Lifetime Costs - Present Value ($)	
Utility	$6,021,902
Community	$7,705,244
Benefit to Cost Ratio	
Utility	1.27
Community	3.92
Cost of Savings per Unit Volume ($/af)	
Utility	$884

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Toilets	5.0%	24.2
SF Lavatory Faucets	5.0%	7.8
SF Showers	5.0%	32.8
SF Dishwashers	5.0%	2.8
SF Clothes Washers	5.0%	21.4
SF Internal Leakage	50.0%	19.9
SF Baths	5.0%	4.3
SF Other	5.0%	10.7
SF Pools	10.0%	0.7
SF Wash Down	10.0%	4.9
SF Car Washing	10.0%	4.9
SF External Leakage	50.0%	3.5
SF Non-Lavatory/Kitchen Faucets	5.0%	18.5
MF Toilets	5.0%	62.9
MF Lavatory Faucets	5.0%	18.6
MF Showers	5.0%	85.8
MF Dishwashers	5.0%	2.9
MF Clothes Washers	5.0%	51.5
MF Internal Leakage	50.0%	21.5
MF Baths	5.0%	1.4
MF Other	5.0%	1.4
MF Pools	10.0%	0.5
MF Wash Down	10.0%	0.9
MF Car Washing	10.0%	0.9
MF External Leakage	50.0%	1.6
MF Non-Lavatory/Kitchen Faucets	5.0%	40.0
BUS Toilets	5.0%	82.7
BUS Urinals	5.0%	31.0
BUS Lavatory Faucets	5.0%	20.7
BUS Showers	5.0%	46.5
BUS Dishwashers	5.0%	31.0
BUS Clothes Washers	5.0%	77.5
BUS Process	5.0%	67.2
BUS Kitchen Spray Rinse	5.0%	25.8
BUS Internal Leakage	50.0%	51.7
BUS Other	5.0%	36.2
BUS Pools	10.0%	6.0
BUS External Leakage	50.0%	6.0
BUS Non-Lavatory/Kitchen Faucets	5.0%	46.5

Targets

Target Method: Percentage

% of Accts Targeted / yr	5.000%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$273,833	$27	$273,860
2021	$275,309	$28	$275,337
2022	$276,792	$28	$276,820
2023	$278,282	$28	$278,310
2024	$279,778	$28	$279,806
2025	$281,281	$28	$281,309
2026	$282,790	$28	$282,818
2027	$284,306	$28	$284,335
2028	$285,829	$29	$285,858
2029	$287,359	$29	$287,388
2030	$288,896	$29	$288,925
2031	$290,310	$29	$290,339
2032	$291,730	$29	$291,760
2033	$293,158	$29	$293,188
2034	$294,594	$29	$294,623
2035	$296,037	$30	$296,067
2036	$297,487	$30	$297,517
2037	$298,946	$30	$298,976
2038	$300,412	$30	$300,442
2039	$301,885	$30	$301,916
2040	$303,367	$30	$303,398
2041	$304,857	$30	$304,888
2042	$306,355	$31	$306,386
2043	$307,861	$31	$307,892
2044	$309,376	$31	$309,407
2045	$310,899	$31	$310,930
2046	$312,431	$31	$312,462
2047	$313,971	$31	$314,003
2048	$315,520	$32	$315,552
2049	$317,078	$32	$317,110
2050	$318,646	$32	$318,677

Targets

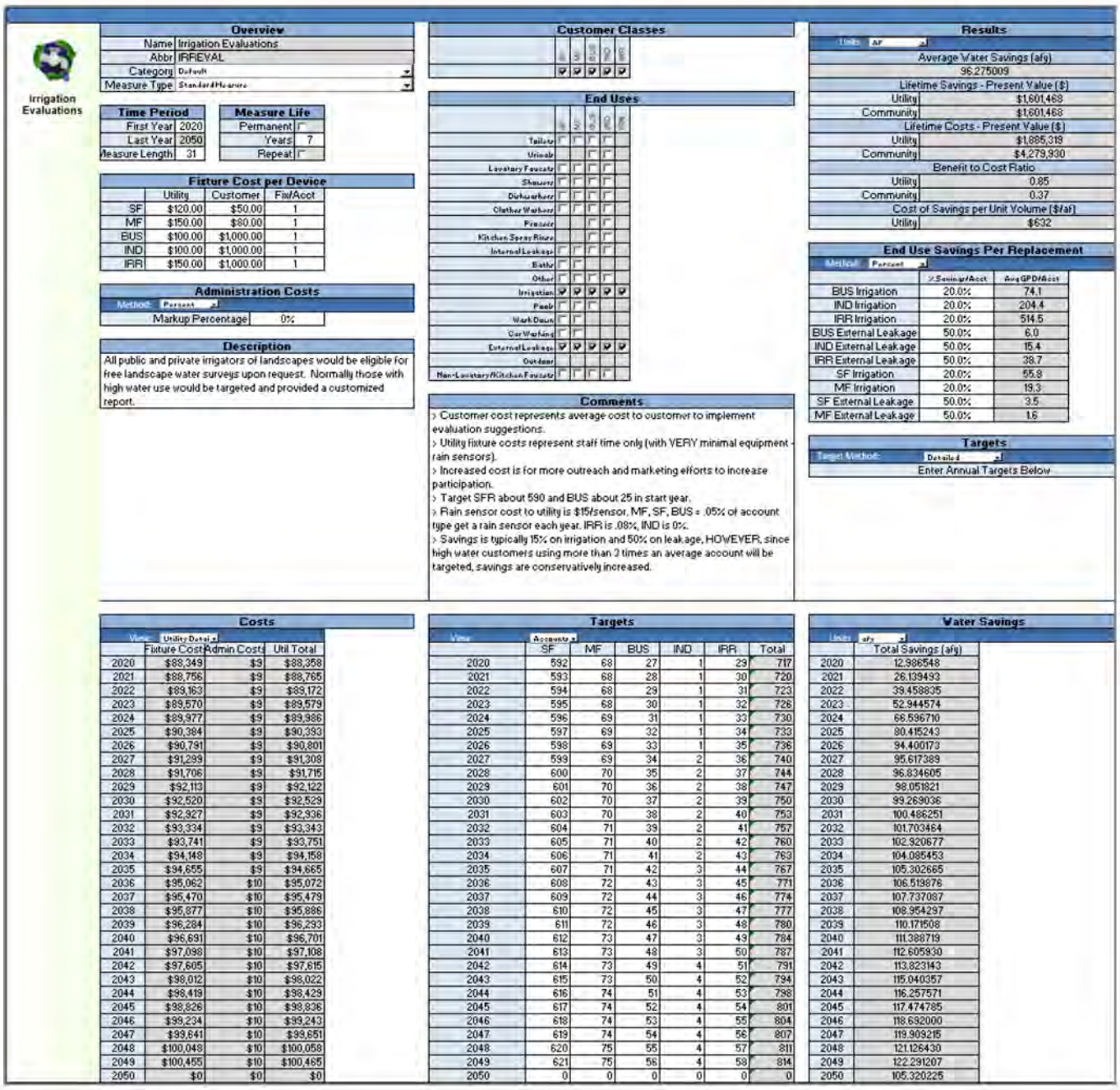
View: Accounts

	SF	MF	BUS	Total
2020	846	355	135	1,336
2021	847	358	136	1,341
2022	849	360	138	1,347
2023	850	363	140	1,353
2024	851	365	142	1,358
2025	852	368	143	1,364
2026	854	371	145	1,369
2027	855	373	147	1,375
2028	856	376	149	1,381
2029	857	378	151	1,387
2030	859	381	153	1,392
2031	859	384	155	1,397
2032	859	386	156	1,402
2033	860	389	158	1,407
2034	860	392	160	1,412
2035	860	394	162	1,417
2036	861	397	164	1,422
2037	861	399	167	1,427
2038	862	402	169	1,432
2039	862	405	171	1,437
2040	862	407	173	1,442
2041	863	410	175	1,447
2042	863	412	177	1,453
2043	863	415	179	1,458
2044	864	418	182	1,463
2045	864	420	184	1,468
2046	864	423	186	1,474
2047	865	426	189	1,479
2048	865	428	191	1,484
2049	866	431	193	1,490
2050	866	433	196	1,495

Water Savings

Units: afy

	Total Savings (afy)
2020	34.500499
2021	68.828093
2022	102.999561
2023	137.030236
2024	170.934146
2025	204.724143
2026	238.412016
2027	238.641931
2028	238.878299
2029	239.121742
2030	239.372792
2031	239.621734
2032	239.927771
2033	240.285501
2034	240.690027
2035	241.136914
2036	241.622140
2037	242.142062
2038	242.710060
2039	243.323031
2040	243.978171
2041	244.672939
2042	245.406239
2043	246.175913
2044	246.980006
2045	247.816747
2046	248.684532
2047	249.581910
2048	250.507565
2049	251.460307
2050	252.439060



Irrigation Evaluations

Overview

Name	Irrigation Evaluations
Abbr	IRREVAL
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	☐
Years	7
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$120.00	$50.00	1
MF	$150.00	$80.00	1
BUS	$100.00	$1,000.00	1
IND	$100.00	$1,000.00	1
IRR	$150.00	$1,000.00	1

Administration Costs

Method: Percent

Markup Percentage	0%

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.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Pressure			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☑	☑	☑	☑	☑
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

› Customer cost represents average cost to customer to implement evaluation suggestions.
› Utility fixture costs represent staff time only (with VERY minimal equipment - rain sensors).
› Increased cost is for more outreach and marketing efforts to increase participation.
› Target SFR about 590 and BUS about 25 in start year.
› Rain sensor cost to utility is $15/sensor. MF, SF, BUS = .05% of account type get a rain sensor each year. IRR is .08%, IND is 0%.
› Savings is typically 15% on irrigation and 50% on leakage, HOWEVER, since high water customers using more than 2 times an average account will be targeted, savings are conservatively increased.

Results

Units: AF

Average Water Savings (afy)	
	96.275009
Lifetime Savings - Present Value ($)	
Utility	$1,601,468
Community	$1,601,468
Lifetime Costs - Present Value ($)	
Utility	$1,885,318
Community	$4,279,930
Benefit to Cost Ratio	
Utility	0.85
Community	0.37
Cost of Savings per Unit Volume ($/af)	
Utility	$632

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
BUS Irrigation	20.0%	74.1
IND Irrigation	20.0%	204.4
IRR Irrigation	20.0%	514.5
BUS External Leakage	50.0%	6.0
IND External Leakage	50.0%	15.4
IRR External Leakage	50.0%	38.7
SF Irrigation	20.0%	55.8
MF Irrigation	20.0%	19.3
SF External Leakage	50.0%	3.5
MF External Leakage	50.0%	1.6

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Cost	Admin Costs	Util Total
2020	$88,349	$9	$88,358
2021	$88,756	$9	$88,765
2022	$89,163	$9	$89,172
2023	$89,570	$9	$89,579
2024	$89,977	$9	$89,986
2025	$90,384	$9	$90,393
2026	$90,791	$9	$90,801
2027	$91,299	$9	$91,308
2028	$91,706	$9	$91,715
2029	$92,113	$9	$92,122
2030	$92,520	$9	$92,529
2031	$92,927	$9	$92,936
2032	$93,334	$9	$93,343
2033	$93,741	$9	$93,751
2034	$94,148	$9	$94,158
2035	$94,655	$9	$94,665
2036	$95,062	$10	$95,072
2037	$95,470	$10	$95,479
2038	$95,877	$10	$95,886
2039	$96,284	$10	$96,293
2040	$96,691	$10	$96,701
2041	$97,098	$10	$97,108
2042	$97,605	$10	$97,615
2043	$98,012	$10	$98,022
2044	$98,419	$10	$98,429
2045	$98,826	$10	$98,836
2046	$99,234	$10	$99,243
2047	$99,641	$10	$99,651
2048	$100,048	$10	$100,058
2049	$100,455	$10	$100,465
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	592	68	27	1	29	717
2021	593	68	28	1	30	720
2022	594	68	29	1	31	723
2023	595	68	30	1	32	726
2024	596	69	31	1	33	730
2025	597	69	32	1	34	733
2026	598	69	33	1	35	736
2027	599	69	34	2	36	740
2028	600	70	35	2	37	744
2029	601	70	36	2	38	747
2030	602	70	37	2	39	750
2031	603	70	38	2	40	753
2032	604	71	39	2	41	757
2033	605	71	40	2	42	760
2034	606	71	41	2	43	763
2035	607	71	42	3	44	767
2036	608	72	43	3	45	771
2037	609	72	44	3	46	774
2038	610	72	45	3	47	777
2039	611	72	46	3	48	780
2040	612	73	47	3	49	784
2041	613	73	48	3	50	787
2042	614	73	49	4	51	791
2043	615	73	50	4	52	794
2044	616	74	51	4	53	798
2045	617	74	52	4	54	801
2046	618	74	53	4	55	804
2047	619	74	54	4	56	807
2048	620	75	55	4	57	811
2049	621	75	56	4	58	814
2050	0	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	12.986548
2021	26.139493
2022	39.458835
2023	52.944574
2024	66.596710
2025	80.415243
2026	94.400173
2027	95.617389
2028	96.834605
2029	98.051821
2030	99.269036
2031	100.486251
2032	101.703464
2033	102.920677
2034	104.085453
2035	105.302665
2036	106.519876
2037	107.737087
2038	108.954297
2039	110.171508
2040	111.388719
2041	112.605930
2042	113.823143
2043	115.040357
2044	116.257571
2045	117.474785
2046	118.692000
2047	119.909215
2048	121.126430
2049	122.291207
2050	105.320225

CII Water Survey Level 2 and Customized Rebate

Overview

Name	CII Water Survey Level 2 and Customized Rebate
Abbr	CIIReb
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent ☑

Fixture Cost per Device

	Utility	Customer	Fix/Acct
BUS	$5,000.00	$10,000.00	1
IND	$5,000.00	$10,000.00	1

Administration Costs

Method: Percent

Markup Percentage	10%

Description

Eligible CII customers can receive a thorough level 2 water survey targeting indoor and non-irrigation outdoor water uses. Irrigation evaluations are conducted separately and tracked in a different measure. After the site survey is complete, the City will analyze the recommendations on the findings report that is provided and determine if the site qualifies for a rebate. Financial incentives will be provided after analyzing the cost benefit ratio of each proposed project. Rebates are tailored to each individual site as each site has varying water savings potential; and will be granted at the sole discretion of the City while funding lasts. The measure is intended to provide financial incentives for unique or site specific items (for example localized recycling systems for commercial laundries). All CII customers are offered a free level 1 water checkup that evaluates ways for a business to save water and money, level 2 surveys are only given to sites that average 100+ HCF/month.

Customer Classes

	SF	MF	BUS	IND	IRR
	☐	☐	☑	☑	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets			☑	☑	
Urinals			☑	☑	
Lavatory Faucets			☑	☑	
Showers			☑	☑	
Dishwashers			☑	☑	
Clothes Washers			☑	☑	
Process			☑	☑	
Kitchen Spray Rinse			☑	☑	
Internal Leakage			☑	☑	
Baths					
Other			☑	☑	
Irrigation			☐	☐	
Pools			☑		
Wash Down					
Car Washing					
External Leakage			☑	☑	
Outdoor					
Non-Lavatory/Kitchen Faucets			☑	☑	

Comments

> Admin costs represent staff time per survey. Assume every other account surveyed receives a rebate.
> Rebate up to $15K - average ~$10K. But not all customers actually take a rebate - assumed 50% do rebates, which makes utility cost $5K. Staff time is about $500 per survey. If an account completes a rebate there is only about one more hour of staff time.
> Typical account savings are 20%, however since large water-using accounts (using more than 4x the average BUS and IND account water use) will be targeted, targeted savings are conservatively doubled to 40% to represent the larger water use customers.
> In 2019 avg water use per CII account is ~29 HCF/mo and the median is ~7HCF/mo. Measure participation req is ~100 HCF/mo (>4 x avg).

Results

Units: AF

Average Water Savings (afy)	
28.017623	
Lifetime Savings - Present Value ($)	
Utility	$910,720
Community	$3,313,109
Lifetime Costs - Present Value ($)	
Utility	$915,904
Community	$2,581,185
Benefit to Cost Ratio	
Utility	0.99
Community	1.28
Cost of Savings per Unit Volume ($/af)	
Utility	$1,055

End Use Savings Per Replacement

Method: Percent

	%Savings/Acct	Avg GPD/Acct
BUS Toilets	40.0%	82.7
BUS Urinals	40.0%	31.0
BUS Lavatory Faucets	40.0%	20.7
BUS Showers	40.0%	46.5
BUS Dishwashers	40.0%	31.0
BUS Clothes Washers	40.0%	77.5
BUS Process	40.0%	67.2
BUS Kitchen Spray Rinse	40.0%	25.8
BUS Internal Leakage	40.0%	51.7
BUS External Leakage	40.0%	6.0
IND Toilets	40.0%	671.7
IND Urinals	40.0%	189.8
IND Lavatory Faucets	40.0%	160.6
IND Showers	40.0%	262.8
IND Dishwashers	40.0%	175.2
IND Clothes Washers	40.0%	438.0
IND Process	40.0%	379.6
IND Kitchen Spray Rinse	40.0%	146.0
IND Internal Leakage	40.0%	248.2
IND External Leakage	40.0%	15.4
BUS Other	40.0%	36.2
IND Other	40.0%	61.3
BUS Pools	40.0%	6.0
BUS Non-Lavatory/Kitchen Faucets	40.0%	46.5
IND Non-Lavatory/Kitchen Faucets	40.0%	186.9

Targets

Target Method: Percentage

% of Accts Targeted / yr	0.250%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$34,350	$3,435	$37,785
2021	$34,781	$3,478	$38,259
2022	$35,217	$3,522	$38,739
2023	$35,659	$3,566	$39,225
2024	$36,107	$3,611	$39,717
2025	$36,560	$3,656	$40,216
2026	$37,018	$3,702	$40,720
2027	$37,483	$3,748	$41,231
2028	$37,953	$3,795	$41,748
2029	$38,429	$3,843	$42,272
2030	$38,911	$3,891	$42,802
2031	$39,399	$3,940	$43,339
2032	$39,894	$3,989	$43,883
2033	$40,394	$4,039	$44,434
2034	$40,901	$4,090	$44,991
2035	$41,414	$4,141	$45,556
2036	$41,934	$4,193	$46,127
2037	$42,460	$4,246	$46,706
2038	$42,993	$4,299	$47,292
2039	$43,532	$4,353	$47,885
2040	$44,078	$4,408	$48,486
2041	$44,631	$4,463	$49,094
2042	$45,191	$4,519	$49,710
2043	$45,758	$4,576	$50,334
2044	$46,332	$4,633	$50,966
2045	$46,914	$4,691	$51,605
2046	$47,502	$4,750	$52,252
2047	$48,098	$4,810	$52,908
2048	$48,702	$4,870	$53,572
2049	$49,313	$4,931	$54,244
2050	$49,931	$4,993	$54,924

Targets

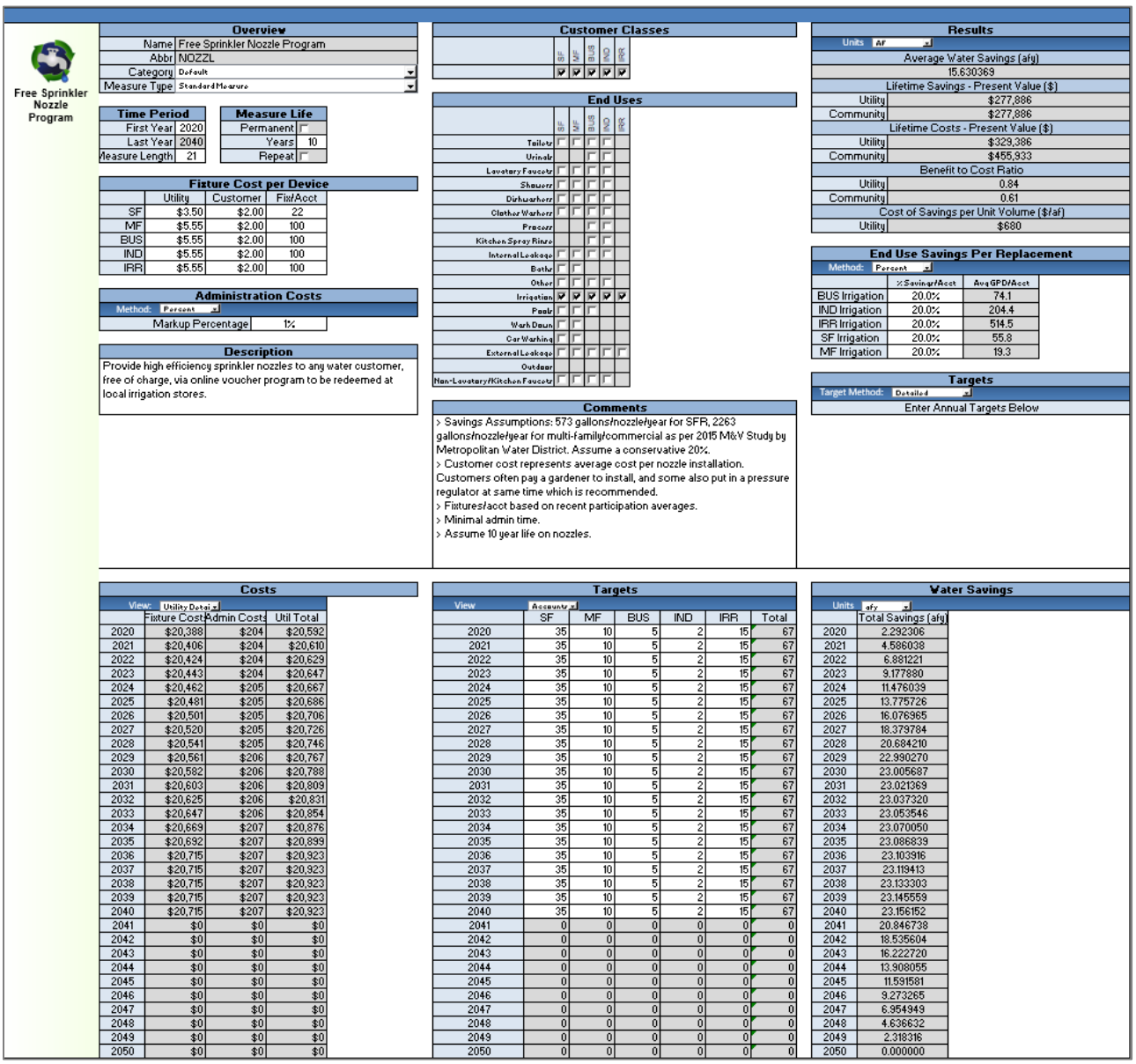
View: Accounts

	BUS	IND	Total
2020	7	0	7
2021	7	0	7
2022	7	0	7
2023	7	0	7
2024	7	0	7
2025	7	0	7
2026	7	0	7
2027	7	0	7
2028	7	0	8
2029	8	0	8
2030	8	0	8
2031	8	0	8
2032	8	0	8
2033	8	0	8
2034	8	0	8
2035	8	0	8
2036	8	0	8
2037	8	0	8
2038	8	0	9
2039	9	0	9
2040	9	0	9
2041	9	0	9
2042	9	0	9
2043	9	0	9
2044	9	0	9
2045	9	0	9
2046	9	0	10
2047	9	0	10
2048	10	0	10
2049	10	0	10
2050	10	0	10

Water Savings

Units: afy

	Total Savings (afy)
2020	1.708771
2021	3.411873
2022	5.111166
2023	6.808379
2024	8.505127
2025	10.202914
2026	11.903147
2027	13.607149
2028	15.316156
2029	17.031328
2030	18.753753
2031	20.484457
2032	22.224693
2033	23.975433
2034	25.737601
2035	27.512072
2036	29.299679
2037	31.101217
2038	32.917444
2039	34.749086
2040	36.596838
2041	38.461369
2042	40.343322
2043	42.243317
2044	44.161953
2045	46.099812
2046	48.057455
2047	50.035430
2048	52.034270
2049	54.054494
2050	56.096611



Free Sprinkler Nozzle Program

Overview

Name	Free Sprinkler Nozzle Program
Abbr	NOZZL
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2040
Measure Length	21

Measure Life

Permanent	☐
Years	10
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$3.50	$2.00	22
MF	$5.55	$2.00	100
BUS	$5.55	$2.00	100
IND	$5.55	$2.00	100
IRR	$5.55	$2.00	100

Administration Costs

Method: Percent

Markup Percentage	1%

Description

Provide high efficiency sprinkler nozzles to any water customer, free of charge, via online voucher program to be redeemed at local irrigation stores.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Faucets			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐	☐	☐
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

› Savings Assumptions: 573 gallons/nozzle/year for SFR, 2263 gallons/nozzle/year for multi-family/commercial as per 2015 M&V Study by Metropolitan Water District. Assume a conservative 20%.
› Customer cost represents average cost per nozzle installation. Customers often pay a gardener to install, and some also put in a pressure regulator at same time which is recommended.
› Fixtures/acct based on recent participation averages.
› Minimal admin time.
› Assume 10 year life on nozzles.

Results

Units: AF

Average Water Savings (afy)	
	15.630369
Lifetime Savings - Present Value ($)	
Utility	$277,886
Community	$277,886
Lifetime Costs - Present Value ($)	
Utility	$329,386
Community	$455,933
Benefit to Cost Ratio	
Utility	0.84
Community	0.61
Cost of Savings per Unit Volume ($/af)	
Utility	$680

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
BUS Irrigation	20.0%	74.1
IND Irrigation	20.0%	204.4
IRR Irrigation	20.0%	514.5
SF Irrigation	20.0%	55.8
MF Irrigation	20.0%	19.3

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Cost	Admin Costs	Util Total
2020	$20,388	$204	$20,592
2021	$20,406	$204	$20,610
2022	$20,424	$204	$20,629
2023	$20,443	$204	$20,647
2024	$20,462	$205	$20,667
2025	$20,481	$205	$20,686
2026	$20,501	$205	$20,706
2027	$20,520	$205	$20,726
2028	$20,541	$205	$20,746
2029	$20,561	$206	$20,767
2030	$20,582	$206	$20,788
2031	$20,603	$206	$20,809
2032	$20,625	$206	$20,831
2033	$20,647	$206	$20,854
2034	$20,669	$207	$20,876
2035	$20,692	$207	$20,899
2036	$20,715	$207	$20,923
2037	$20,715	$207	$20,923
2038	$20,715	$207	$20,923
2039	$20,715	$207	$20,923
2040	$20,715	$207	$20,923
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	35	10	5	2	15	67
2021	35	10	5	2	15	67
2022	35	10	5	2	15	67
2023	35	10	5	2	15	67
2024	35	10	5	2	15	67
2025	35	10	5	2	15	67
2026	35	10	5	2	15	67
2027	35	10	5	2	15	67
2028	35	10	5	2	15	67
2029	35	10	5	2	15	67
2030	35	10	5	2	15	67
2031	35	10	5	2	15	67
2032	35	10	5	2	15	67
2033	35	10	5	2	15	67
2034	35	10	5	2	15	67
2035	35	10	5	2	15	67
2036	35	10	5	2	15	67
2037	35	10	5	2	15	67
2038	35	10	5	2	15	67
2039	35	10	5	2	15	67
2040	35	10	5	2	15	67
2041	0	0	0	0	0	0
2042	0	0	0	0	0	0
2043	0	0	0	0	0	0
2044	0	0	0	0	0	0
2045	0	0	0	0	0	0
2046	0	0	0	0	0	0
2047	0	0	0	0	0	0
2048	0	0	0	0	0	0
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	2.292306
2021	4.586038
2022	6.881221
2023	9.177880
2024	11.476039
2025	13.775726
2026	16.076965
2027	18.379784
2028	20.684210
2029	22.990270
2030	23.005687
2031	23.021369
2032	23.037320
2033	23.053546
2034	23.070050
2035	23.086839
2036	23.103916
2037	23.119413
2038	23.133303
2039	23.145559
2040	23.156152
2041	20.846738
2042	18.535604
2043	16.222720
2044	13.908055
2045	11.591581
2046	9.273265
2047	6.954949
2048	4.636632
2049	2.318316
2050	0.000000

Mulch Program

Overview

Name	Mulch Program
Abbr	MULCH
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	
Years	2
Repeat	

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$40.00	$0.00	1
MF	$40.00	$0.00	2
BUS	$40.00	$0.00	1
IND	$40.00	$0.00	1
IRR	$40.00	$0.00	2

Administration Costs

Method: Percent

Markup Percentage	2%

Description

City will subsidize delivery charges for free mulch offered by the County so it is completely free to customers. Up to two free deliveries every 12 months. Larger customers often get two deliveries at once. Goal is to reduce runoff and keep water from evaporating. The water savings benefits from keeping the soil moist after rainfall and irrigation, reducing the need and frequency of watering.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐	☐	☐
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> Current City cost is $40/load for delivery. Load approx. 8-10 yards.
> Most IRR & MFR accounts get 2 loads-worth per delivery.
> Savings sources: https://saveourwater.com/conservation-lifestyle/around-the-yard/ & www.allianceforwaterefficiency.org/Mulches_for_the_Landscape.aspx
> SaveOurWater.com states mulch saves 20-30 gallons/ 1,000 sq ft each watering incident.
> Minimal customer cost. SFR seem to do the labor themselves or it is part of regular gardener duties for other account types. Customers fill out and submit simple form, then call to arrange delivery date, then have the mulch pile distributed around their garden as they see fit.
> Admin markup is minimal at 2% since admin time/costs are low; just some quick data entry and paying bulk invoices.
> Targets are based on an avg of the past 5 years (2014-2019) and assume lower participation levels after the City switches to a rebate (pay first, then get reimbursed). 2019 targets to start as follows and grow proportional to customer category growth. SF: 290, MF: 12, BUS: 1, IRR: 4
> IRR savings percentage is assumed to be slightly higher due to multiple loads delivered/used.

Results

Units: AF

Average Water Savings (afy)	
	4.639735
Lifetime Savings - Present Value ($)	
Utility	$80,739
Community	$80,739
Lifetime Costs - Present Value ($)	
Utility	$287,676
Community	$287,676
Benefit to Cost Ratio	
Utility	0.28
Community	0.28
Cost of Savings per Unit Volume ($/af)	
Utility	$2,000

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Irrigation	10.0%	55.8
MF Irrigation	10.0%	19.3
BUS Irrigation	10.0%	74.1
IND Irrigation	10.0%	204.4
IRR Irrigation	15.0%	514.5

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$13,017	$260	$13,278
2021	$13,070	$261	$13,332
2022	$13,124	$262	$13,386
2023	$13,177	$264	$13,441
2024	$13,231	$265	$13,496
2025	$13,285	$266	$13,551
2026	$13,339	$267	$13,606
2027	$13,393	$268	$13,661
2028	$13,447	$269	$13,716
2029	$13,501	$270	$13,771
2030	$13,556	$271	$13,827
2031	$13,610	$272	$13,883
2032	$13,665	$273	$13,938
2033	$13,720	$274	$13,994
2034	$13,775	$276	$14,051
2035	$13,830	$277	$14,107
2036	$13,886	$278	$14,163
2037	$13,941	$279	$14,220
2038	$13,997	$280	$14,277
2039	$14,052	$281	$14,333
2040	$14,108	$282	$14,391
2041	$14,165	$283	$14,448
2042	$14,221	$284	$14,505
2043	$14,277	$286	$14,563
2044	$14,334	$287	$14,621
2045	$14,391	$288	$14,679
2046	$14,448	$289	$14,737
2047	$14,505	$290	$14,795
2048	$14,563	$291	$14,854
2049	$14,620	$292	$14,913
2050	$14,678	$294	$14,972

Targets

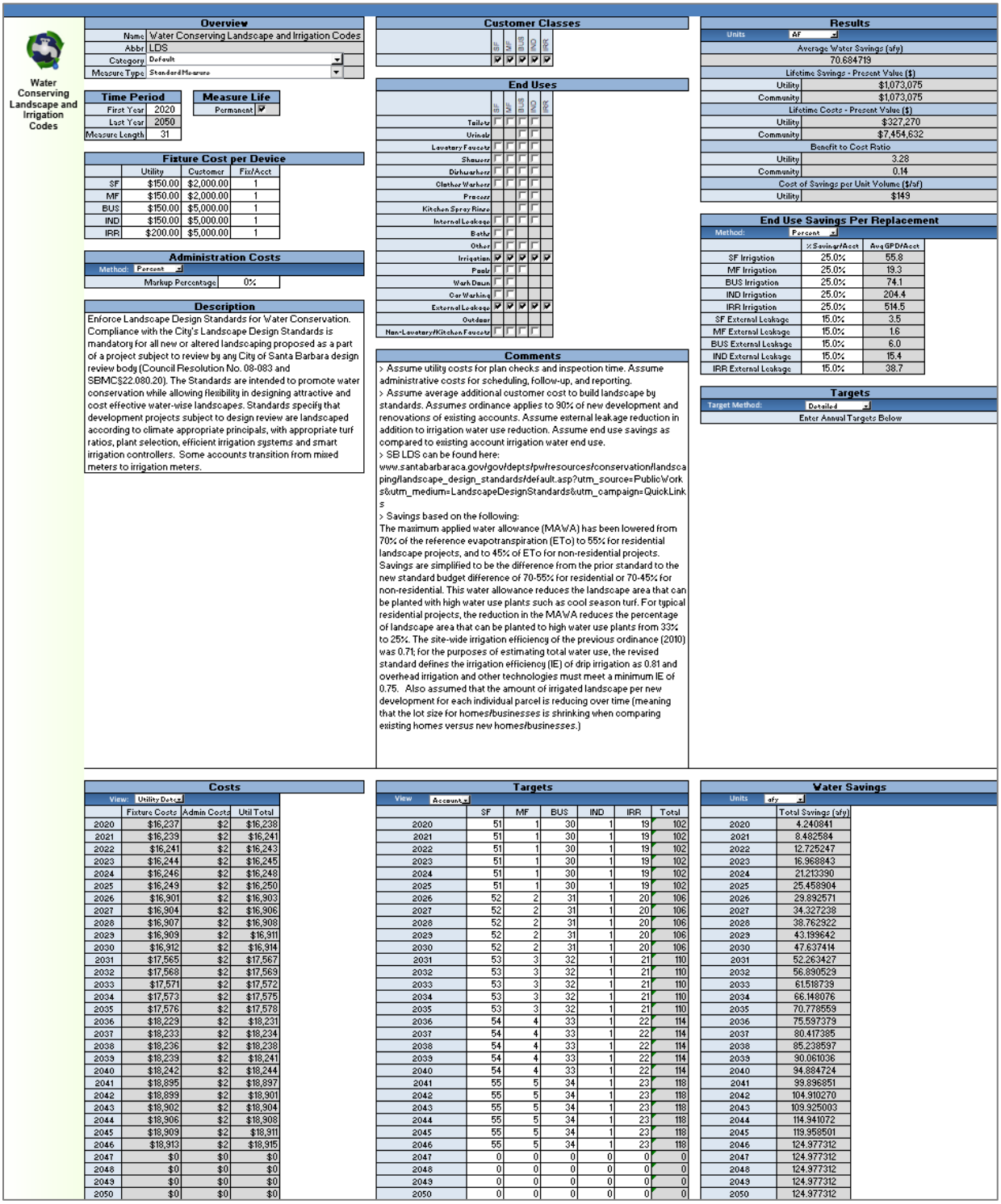
View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	291	12	1	1	4	309
2021	292	12	1	1	4	311
2022	293	12	1	1	4	312
2023	294	12	1	1	4	313
2024	295	12	1	1	4	314
2025	296	12	1	1	4	315
2026	297	12	1	1	5	317
2027	299	12	1	1	5	318
2028	300	12	1	1	5	319
2029	301	12	1	1	5	320
2030	302	12	1	1	5	322
2031	303	13	1	1	5	323
2032	304	13	1	1	5	324
2033	305	13	1	1	5	325
2034	306	13	1	1	5	327
2035	307	13	1	1	5	328
2036	308	13	1	1	5	329
2037	309	13	1	1	5	330
2038	310	13	1	2	6	332
2039	311	13	1	2	6	333
2040	312	13	1	2	6	334
2041	313	13	1	2	6	335
2042	315	13	1	2	6	337
2043	316	13	2	2	6	338
2044	317	13	2	2	6	339
2045	318	13	2	2	6	340
2046	319	13	2	2	6	342
2047	320	13	2	2	6	343
2048	321	13	2	2	7	344
2049	322	13	2	2	7	346
2050	323	13	2	2	7	347

Water Savings

Units: afy

	Total Savings (afy)
2020	2.149398
2021	4.312908
2022	4.338843
2023	4.364999
2024	4.391380
2025	4.417991
2026	4.444835
2027	4.471916
2028	4.499239
2029	4.526807
2030	4.554625
2031	4.582693
2032	4.611016
2033	4.639602
2034	4.668455
2035	4.697580
2036	4.726981
2037	4.756664
2038	4.786633
2039	4.816893
2040	4.847450
2041	4.878307
2042	4.909471
2043	4.940959
2044	4.972766
2045	5.004885
2046	5.037332
2047	5.070112
2048	5.103232
2049	5.136697
2050	5.170514



Water Conserving Landscape and Irrigation Codes

Overview

Name	Water Conserving Landscape and Irrigation Codes
Abbr	LDS
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent ☑

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$150.00	$2,000.00	1
MF	$150.00	$2,000.00	1
BUS	$150.00	$5,000.00	1
IND	$150.00	$5,000.00	1
IRR	$200.00	$5,000.00	1

Administration Costs

Method: Percent

Markup Percentage	0%

Description

Enforce Landscape Design Standards for Water Conservation. Compliance with the City's Landscape Design Standards is mandatory for all new or altered landscaping proposed as a part of a project subject to review by any City of Santa Barbara design review body (Council Resolution No. 08-083 and SBMC§22.080.20). The Standards are intended to promote water conservation while allowing flexibility in designing attractive and cost effective water-wise landscapes. Standards specify that development projects subject to design review are landscaped according to climate appropriate principals, with appropriate turf ratios, plant selection, efficient irrigation systems and smart irrigation controllers. Some accounts transition from mixed meters to irrigation meters.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Prescrs			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☑	☑	☑	☑	☑
Outdoor			☐	☐	
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> Assume utility costs for plan checks and inspection time. Assume administrative costs for scheduling, follow-up, and reporting.
> Assume average additional customer cost to build landscape by standards. Assumes ordinance applies to 90% of new development and renovations of existing accounts. Assume external leakage reduction in addition to irrigation water use reduction. Assume end use savings as compared to existing account irrigation water end use.
> SB LDS can be found here: www.santabarbaraca.gov/gov/depts/pw/resources/conservation/landscaping/landscape_design_standards/default.asp?utm_source=PublicWorks&utm_medium=LandscapeDesignStandards&utm_campaign=QuickLinks
> Savings based on the following:
The maximum applied water allowance (MAWA) has been lowered from 70% of the reference evapotranspiration (ETo) to 55% for residential landscape projects, and to 45% of ETo for non-residential projects. Savings are simplified to be the difference from the prior standard to the new standard budget difference of 70-55% for residential or 70-45% for non-residential. This water allowance reduces the landscape area that can be planted with high water use plants such as cool season turf. For typical residential projects, the reduction in the MAWA reduces the percentage of landscape area that can be planted to high water use plants from 33% to 25%. The site-wide irrigation efficiency of the previous ordinance (2010) was 0.71; for the purposes of estimating total water use, the revised standard defines the irrigation efficiency (IE) of drip irrigation as 0.81 and overhead irrigation and other technologies must meet a minimum IE of 0.75. Also assumed that the amount of irrigated landscape per new development for each individual parcel is reducing over time (meaning that the lot size for homes/businesses is shrinking when comparing existing homes versus new homes/businesses.)

Results

Units: AF

Average Water Savings (afy)	
	70.684719
Lifetime Savings - Present Value ($)	
Utility	$1,073,075
Community	$1,073,075
Lifetime Costs - Present Value ($)	
Utility	$327,270
Community	$7,454,632
Benefit to Cost Ratio	
Utility	3.28
Community	0.14
Cost of Savings per Unit Volume ($/sf)	
Utility	$149

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Irrigation	25.0%	55.8
MF Irrigation	25.0%	19.3
BUS Irrigation	25.0%	74.1
IND Irrigation	25.0%	204.4
IRR Irrigation	25.0%	514.5
SF External Leakage	15.0%	3.5
MF External Leakage	15.0%	1.6
BUS External Leakage	15.0%	6.0
IND External Leakage	15.0%	15.4
IRR External Leakage	15.0%	38.7

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$16,237	$2	$16,238
2021	$16,239	$2	$16,241
2022	$16,241	$2	$16,243
2023	$16,244	$2	$16,245
2024	$16,246	$2	$16,248
2025	$16,249	$2	$16,250
2026	$16,901	$2	$16,903
2027	$16,904	$2	$16,906
2028	$16,907	$2	$16,908
2029	$16,909	$2	$16,911
2030	$16,912	$2	$16,914
2031	$17,565	$2	$17,567
2032	$17,568	$2	$17,569
2033	$17,571	$2	$17,572
2034	$17,573	$2	$17,575
2035	$17,576	$2	$17,578
2036	$18,229	$2	$18,231
2037	$18,233	$2	$18,234
2038	$18,236	$2	$18,238
2039	$18,239	$2	$18,241
2040	$18,242	$2	$18,244
2041	$18,895	$2	$18,897
2042	$18,899	$2	$18,901
2043	$18,902	$2	$18,904
2044	$18,906	$2	$18,908
2045	$18,909	$2	$18,911
2046	$18,913	$2	$18,915
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

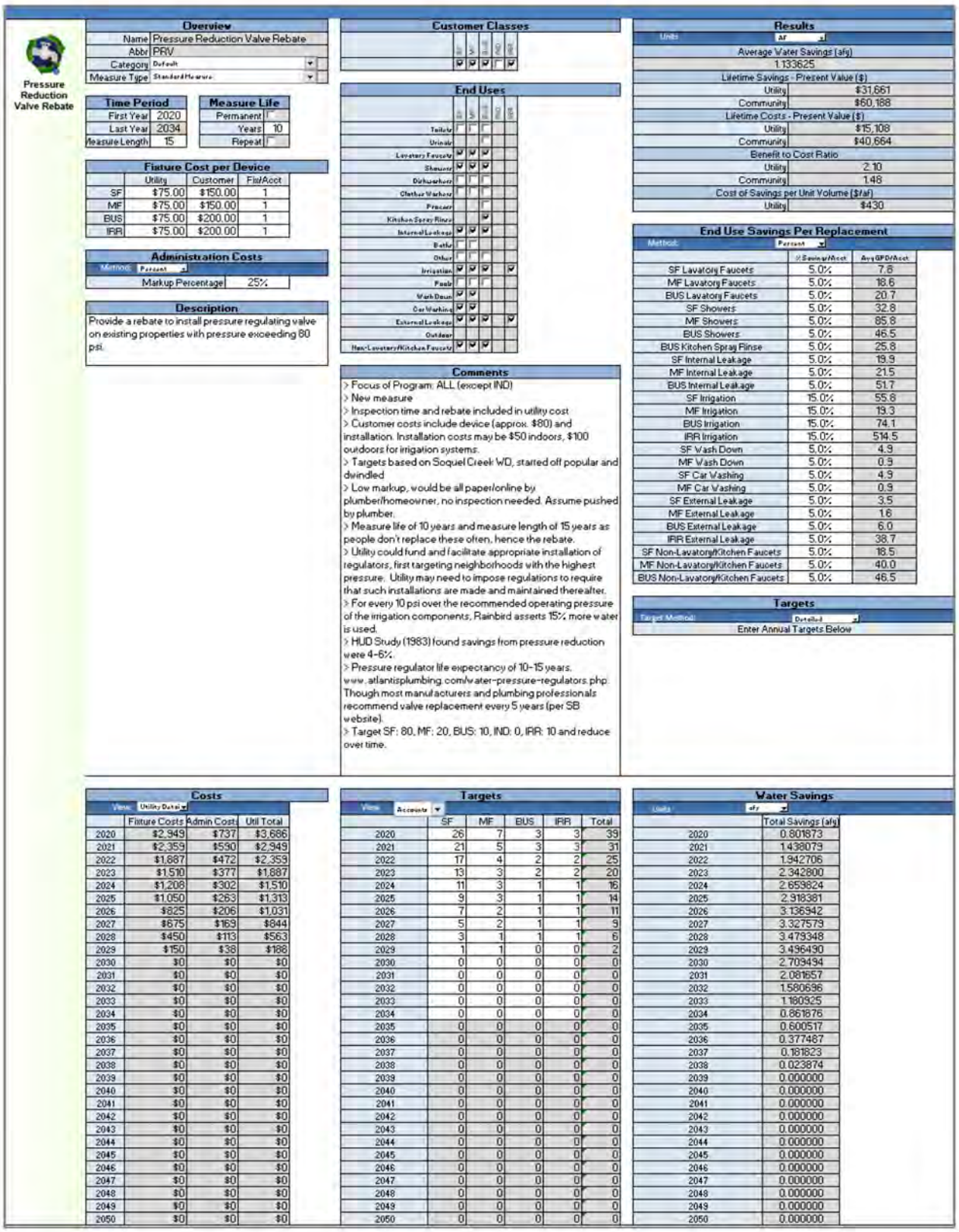
View: Account

	SF	MF	BUS	IND	IRR	Total
2020	51	1	30	1	19	102
2021	51	1	30	1	19	102
2022	51	1	30	1	19	102
2023	51	1	30	1	19	102
2024	51	1	30	1	19	102
2025	51	1	30	1	19	102
2026	52	2	31	1	20	106
2027	52	2	31	1	20	106
2028	52	2	31	1	20	106
2029	52	2	31	1	20	106
2030	52	2	31	1	20	106
2031	53	3	32	1	21	110
2032	53	3	32	1	21	110
2033	53	3	32	1	21	110
2034	53	3	32	1	21	110
2035	53	3	32	1	21	110
2036	54	4	33	1	22	114
2037	54	4	33	1	22	114
2038	54	4	33	1	22	114
2039	54	4	33	1	22	114
2040	54	4	33	1	22	114
2041	55	5	34	1	23	118
2042	55	5	34	1	23	118
2043	55	5	34	1	23	118
2044	55	5	34	1	23	118
2045	55	5	34	1	23	118
2046	55	5	34	1	23	118
2047	0	0	0	0	0	0
2048	0	0	0	0	0	0
2049	0	0	0	0	0	0
2050	0	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	4.240841
2021	8.482584
2022	12.725247
2023	16.968843
2024	21.213390
2025	25.458904
2026	29.892571
2027	34.327238
2028	38.762922
2029	43.199642
2030	47.637414
2031	52.263427
2032	56.890529
2033	61.518739
2034	66.148076
2035	70.778559
2036	75.597379
2037	80.417385
2038	85.238597
2039	90.061036
2040	94.884724
2041	99.896851
2042	104.910270
2043	109.925003
2044	114.941072
2045	119.958501
2046	124.977312
2047	124.977312
2048	124.977312
2049	124.977312
2050	124.977312



Pressure Reduction Valve Rebate

Overview

Name	Pressure Reduction Valve Rebate
Abbr	PRV
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2034
Measure Length	15

Measure Life

Permanent	☐
Years	10
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$75.00	$150.00	1
MF	$75.00	$150.00	1
BUS	$75.00	$200.00	1
IRR	$75.00	$200.00	1

Administration Costs

Method: Percent

Markup Percentage	25%

Description

Provide a rebate to install pressure regulating valve on existing properties with pressure exceeding 80 psi.

Customer Classes

SF	MF	BUS	IRR	IND
☑	☑	☑	☐	☑

End Uses

	SF	MF	BUS	IRR	IND
Toilets	☐	☐	☐		
Urinals			☐		
Lavatory Faucets	☑	☑	☑		
Showers	☑	☑	☑		
Dishwashers	☐	☐	☐		
Clothes Washers	☐	☐	☐		
Process			☐		
Kitchen Spray Rinse			☑		
Internal Leakage	☑	☑	☑		
Baths	☐	☐			
Other	☐	☐	☐		
Irrigation	☑	☑	☑		☑
Pools	☐	☐			
Wash Down	☑	☑			
Car Washing	☑	☑			
External Leakage	☑	☑	☑		☑
Outdoor					
Non-Lavatory/Kitchen Faucets	☑	☑	☑		

Comments

> Focus of Program: ALL (except IND)
> New measure
> Inspection time and rebate included in utility cost
> Customer costs include device (approx. $80) and installation. Installation costs may be $50 indoors, $100 outdoors for irrigation systems.
> Targets based on Soquel Creek WD, started off popular and dwindled
> Low markup, would be all paper/online by plumber/homeowner, no inspection needed. Assume pushed by plumber.
> Measure life of 10 years and measure length of 15 years as people don't replace these often, hence the rebate.
> Utility could fund and facilitate appropriate installation of regulators, first targeting neighborhoods with the highest pressure. Utility may need to impose regulations to require that such installations are made and maintained thereafter.
> For every 10 psi over the recommended operating pressure of the irrigation components, Rainbird asserts 15% more water is used.
> HUD Study (1983) found savings from pressure reduction were 4-6%.
> Pressure regulator life expectancy of 10-15 years. www.atlantisplumbing.com/water-pressure-regulators.php. Though most manufacturers and plumbing professionals recommend valve replacement every 5 years (per SB website).
> Target SF: 80, MF: 20, BUS: 10, IND: 0, IRR: 10 and reduce over time.

Results

Units: AF

Average Water Savings (afy)	
	1.133625
Lifetime Savings - Present Value ($)	
Utility	$31,661
Community	$60,188
Lifetime Costs - Present Value ($)	
Utility	$15,108
Community	$40,664
Benefit to Cost Ratio	
Utility	2.10
Community	1.48
Cost of Savings per Unit Volume ($/af)	
Utility	$430

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Lavatory Faucets	5.0%	7.8
MF Lavatory Faucets	5.0%	18.6
BUS Lavatory Faucets	5.0%	20.7
SF Showers	5.0%	32.8
MF Showers	5.0%	85.8
BUS Showers	5.0%	46.5
BUS Kitchen Spray Rinse	5.0%	25.8
SF Internal Leakage	5.0%	19.9
MF Internal Leakage	5.0%	21.5
BUS Internal Leakage	5.0%	51.7
SF Irrigation	15.0%	55.8
MF Irrigation	15.0%	19.3
BUS Irrigation	15.0%	74.1
IRR Irrigation	15.0%	514.5
SF Wash Down	5.0%	4.9
MF Wash Down	5.0%	0.9
SF Car Washing	5.0%	4.9
MF Car Washing	5.0%	0.9
SF External Leakage	5.0%	3.5
MF External Leakage	5.0%	1.6
BUS External Leakage	5.0%	6.0
IRR External Leakage	5.0%	38.7
SF Non-Lavatory/Kitchen Faucets	5.0%	18.5
MF Non-Lavatory/Kitchen Faucets	5.0%	40.0
BUS Non-Lavatory/Kitchen Faucets	5.0%	46.5

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$2,949	$737	$3,686
2021	$2,359	$590	$2,949
2022	$1,887	$472	$2,359
2023	$1,510	$377	$1,887
2024	$1,208	$302	$1,510
2025	$1,050	$263	$1,313
2026	$825	$206	$1,031
2027	$675	$169	$844
2028	$450	$113	$563
2029	$150	$38	$188
2030	$0	$0	$0
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

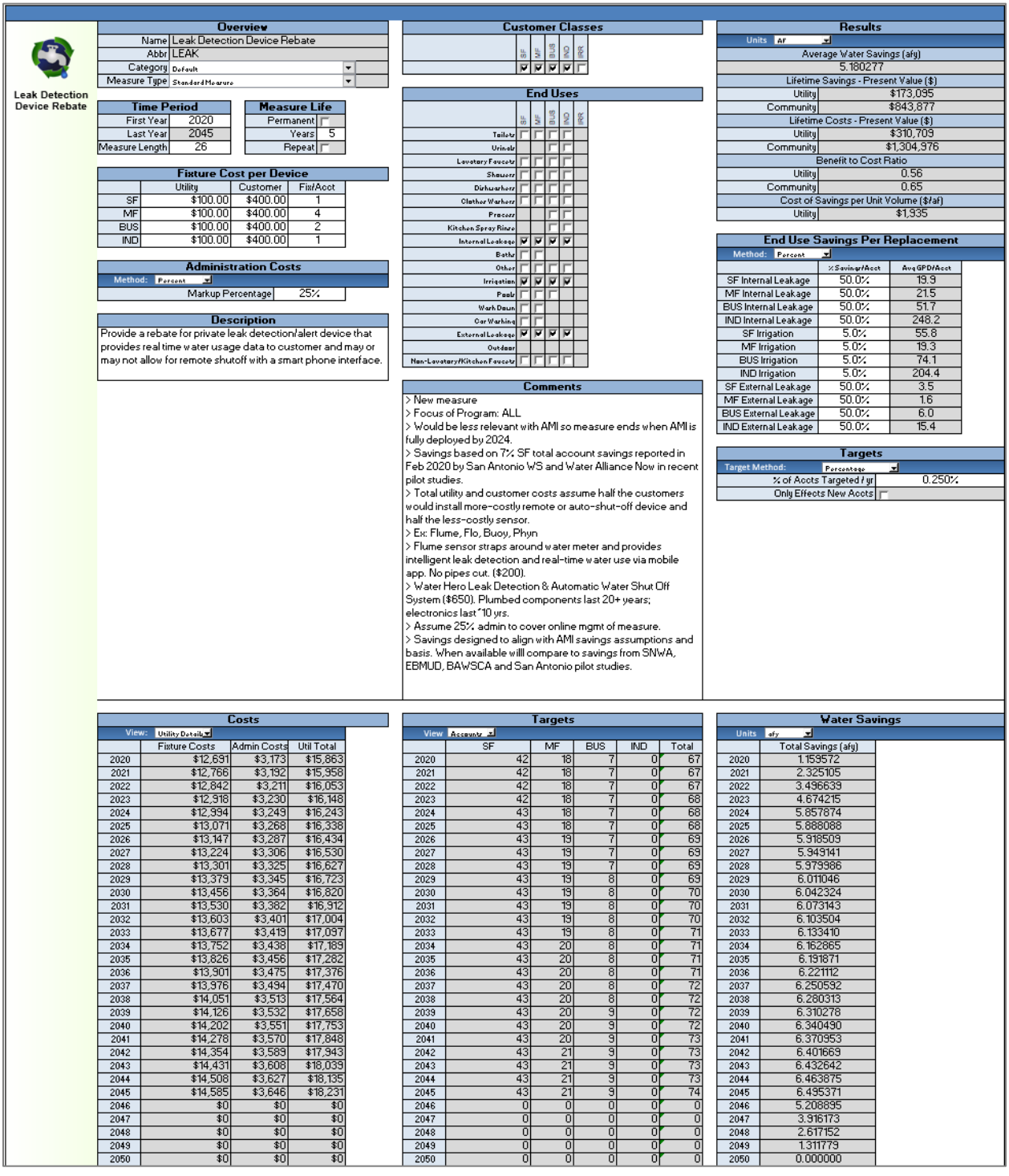
View: Accounts

	SF	MF	BUS	IRR	Total
2020	26	7	3	3	39
2021	21	5	3	3	31
2022	17	4	2	2	25
2023	13	3	2	2	20
2024	11	3	1	1	16
2025	9	3	1	1	14
2026	7	2	1	1	11
2027	5	2	1	1	9
2028	3	1	1	1	6
2029	1	1	0	0	2
2030	0	0	0	0	0
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2036	0	0	0	0	0
2037	0	0	0	0	0
2038	0	0	0	0	0
2039	0	0	0	0	0
2040	0	0	0	0	0
2041	0	0	0	0	0
2042	0	0	0	0	0
2043	0	0	0	0	0
2044	0	0	0	0	0
2045	0	0	0	0	0
2046	0	0	0	0	0
2047	0	0	0	0	0
2048	0	0	0	0	0
2049	0	0	0	0	0
2050	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.801873
2021	1.438079
2022	1.942706
2023	2.342800
2024	2.659824
2025	2.918381
2026	3.136942
2027	3.327579
2028	3.479348
2029	3.496490
2030	2.709494
2031	2.081657
2032	1.580696
2033	1.180925
2034	0.861676
2035	0.600517
2036	0.377467
2037	0.181823
2038	0.023874
2039	0.000000
2040	0.000000
2041	0.000000
2042	0.000000
2043	0.000000
2044	0.000000
2045	0.000000
2046	0.000000
2047	0.000000
2048	0.000000
2049	0.000000
2050	0.000000



Leak Detection Device Rebate

Overview

Name	Leak Detection Device Rebate
Abbr	LEAK
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2045
Measure Length	26

Measure Life

Permanent	☐
Years	5
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$100.00	$400.00	1
MF	$100.00	$400.00	4
BUS	$100.00	$400.00	2
IND	$100.00	$400.00	1

Administration Costs

Method: Percent

Markup Percentage	25%

Description

Provide a rebate for private leak detection/alert device that provides real time water usage data to customer and may or may not allow for remote shutoff with a smart phone interface.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☑	☑	☑	☑	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☑	☑	☑	☑	
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> New measure
> Focus of Program: ALL
> Would be less relevant with AMI so measure ends when AMI is fully deployed by 2024.
> Savings based on 7% SF total account savings reported in Feb 2020 by San Antonio WS and Water Alliance Now in recent pilot studies.
> Total utility and customer costs assume half the customers would install more-costly remote or auto-shut-off device and half the less-costly sensor.
> Ex: Flume, Flo, Buoy, Phyn
> Flume sensor straps around water meter and provides intelligent leak detection and real-time water use via mobile app. No pipes cut. ($200).
> Water Hero Leak Detection & Automatic Water Shut Off System ($650). Plumbed components last 20+ years; electronics last ~10 yrs.
> Assume 25% admin to cover online mgmt of measure.
> Savings designed to align with AMI savings assumptions and basis. When available willl compare to savings from SNWA, EBMUD, BAWSCA and San Antonio pilot studies.

Results

Units: AF

Average Water Savings (afy)	
	5.180277
Lifetime Savings - Present Value ($)	
Utility	$173,095
Community	$843,877
Lifetime Costs - Present Value ($)	
Utility	$310,709
Community	$1,304,976
Benefit to Cost Ratio	
Utility	0.56
Community	0.65
Cost of Savings per Unit Volume ($/af)	
Utility	$1,935

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Internal Leakage	50.0%	19.9
MF Internal Leakage	50.0%	21.5
BUS Internal Leakage	50.0%	51.7
IND Internal Leakage	50.0%	248.2
SF Irrigation	5.0%	55.8
MF Irrigation	5.0%	19.3
BUS Irrigation	5.0%	74.1
IND Irrigation	5.0%	204.4
SF External Leakage	50.0%	3.5
MF External Leakage	50.0%	1.6
BUS External Leakage	50.0%	6.0
IND External Leakage	50.0%	15.4

Targets

Target Method: Percentage

% of Accts Targeted / yr	0.250%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$12,691	$3,173	$15,863
2021	$12,766	$3,192	$15,958
2022	$12,842	$3,211	$16,053
2023	$12,918	$3,230	$16,148
2024	$12,994	$3,249	$16,243
2025	$13,071	$3,268	$16,338
2026	$13,147	$3,287	$16,434
2027	$13,224	$3,306	$16,530
2028	$13,301	$3,325	$16,627
2029	$13,379	$3,345	$16,723
2030	$13,456	$3,364	$16,820
2031	$13,530	$3,382	$16,912
2032	$13,603	$3,401	$17,004
2033	$13,677	$3,419	$17,097
2034	$13,752	$3,438	$17,189
2035	$13,826	$3,456	$17,282
2036	$13,901	$3,475	$17,376
2037	$13,976	$3,494	$17,470
2038	$14,051	$3,513	$17,564
2039	$14,126	$3,532	$17,658
2040	$14,202	$3,551	$17,753
2041	$14,278	$3,570	$17,848
2042	$14,354	$3,589	$17,943
2043	$14,431	$3,608	$18,039
2044	$14,508	$3,627	$18,135
2045	$14,585	$3,646	$18,231
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	IND	Total
2020	42	18	7	0	67
2021	42	18	7	0	67
2022	42	18	7	0	67
2023	42	18	7	0	68
2024	43	18	7	0	68
2025	43	18	7	0	68
2026	43	19	7	0	69
2027	43	19	7	0	69
2028	43	19	7	0	69
2029	43	19	8	0	69
2030	43	19	8	0	70
2031	43	19	8	0	70
2032	43	19	8	0	70
2033	43	19	8	0	71
2034	43	20	8	0	71
2035	43	20	8	0	71
2036	43	20	8	0	71
2037	43	20	8	0	72
2038	43	20	8	0	72
2039	43	20	9	0	72
2040	43	20	9	0	72
2041	43	20	9	0	73
2042	43	21	9	0	73
2043	43	21	9	0	73
2044	43	21	9	0	73
2045	43	21	9	0	74
2046	0	0	0	0	0
2047	0	0	0	0	0
2048	0	0	0	0	0
2049	0	0	0	0	0
2050	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	1.159572
2021	2.325105
2022	3.496639
2023	4.674215
2024	5.857874
2025	5.888088
2026	5.918509
2027	5.949141
2028	5.979986
2029	6.011046
2030	6.042324
2031	6.073143
2032	6.103504
2033	6.133410
2034	6.162865
2035	6.191871
2036	6.221112
2037	6.250592
2038	6.280313
2039	6.310278
2040	6.340490
2041	6.370953
2042	6.401669
2043	6.432642
2044	6.463875
2045	6.495371
2046	5.208895
2047	3.916173
2048	2.617152
2049	1.311779
2050	0.000000

Ultra-High Efficiency Toilet Rebate

Overview

Name	Ultra-High Efficiency Toilet Rebate
Abbr	UHET
Category	Default
Measure Type	Standard Measure

Time Period	
First Year	2020
Last Year	2025
Measure Length	6

Measure Life	
Permanent	☑

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$150.00	$150.00	2
MF	$150.00	$150.00	4
BUS	$150.00	$250.00	4
IND	$150.00	$250.00	4

Administration Costs

Method: Percent

Markup Percentage	25%

Description

Replace a toilet that uses 1.6 gallons per flush (GPF) or more with an EPA WaterSense-approved Ultra-High Efficiency Toilet (UHET) that uses 0.8 GPF or less and receive a rebate.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☑	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☑	☑	☑	☑	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☐	☐	☐	☐	
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐	☐	
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> Focus of Program: SF MF CII
> Rebate amount reflects the incremental purchase cost.
> Customer cost reflects the remaining fixture and installation costs.
> Savings estimates assume the difference between 0.8 and 1.6.
> Measure implementation period is based on the current and anticipated changes in plumbing codes that would negate the need for this fixture rebates. Ending this measure avoids free-ridership.

Results

Units: AF

Average Water Savings (afy)	
	14.212091
Lifetime Savings - Present Value ($)	
Utility	$538,834
Community	$538,834
Lifetime Costs - Present Value ($)	
Utility	$405,818
Community	$762,075
Benefit to Cost Ratio	
Utility	1.33
Community	0.71
Cost of Savings per Unit Volume ($/af)	
Utility	$921

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Toilets	50.0%	24.2
MF Toilets	50.0%	62.9
BUS Toilets	50.0%	82.7
IND Toilets	50.0%	671.7

Targets

Target Method: Percentage

% of Accts Targeted / yr	0.500%
Only Effects New Accts	☐

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$57,467	$14,367	$71,834
2021	$57,768	$14,442	$72,210
2022	$58,071	$14,518	$72,588
2023	$58,374	$14,594	$72,968
2024	$58,679	$14,670	$73,349
2025	$58,986	$14,746	$73,732
2026	$0	$0	$0
2027	$0	$0	$0
2028	$0	$0	$0
2029	$0	$0	$0
2030	$0	$0	$0
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	IND	Total
2020	85	35	13	0	134
2021	85	36	14	0	134
2022	85	36	14	0	135
2023	85	36	14	0	136
2024	85	37	14	0	136
2025	85	37	14	0	137
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
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2036	0	0	0	0	0
2037	0	0	0	0	0
2038	0	0	0	0	0
2039	0	0	0	0	0
2040	0	0	0	0	0
2041	0	0	0	0	0
2042	0	0	0	0	0
2043	0	0	0	0	0
2044	0	0	0	0	0
2045	0	0	0	0	0
2046	0	0	0	0	0
2047	0	0	0	0	0
2048	0	0	0	0	0
2049	0	0	0	0	0
2050	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	3.010971
2021	5.962332
2022	8.857529
2023	11.699840
2024	14.492378
2025	17.238105
2026	17.037100
2027	16.842027
2028	16.652650
2029	16.468739
2030	16.290077
2031	16.118023
2032	15.951632
2033	15.790679
2034	15.634950
2035	15.484236
2036	15.338339
2037	15.197069
2038	15.060242
2039	14.927682
2040	14.799222
2041	14.674700
2042	14.553960
2043	14.436852
2044	14.323235
2045	14.212971
2046	14.105927
2047	14.001978
2048	13.901001
2049	13.802880
2050	13.707503

Ultra-High Efficiency Urinal Rebate

Overview	
Name	Ultra-High Efficiency Urinal Rebate
Abbr	UHEU
Category	Default
Measure Type	Standard Measure

Time Period	
First Year	2020
Last Year	2025
Measure Length	6

Measure Life	
Permanent	☑

Fixture Cost per Device	Utility	Customer	Fix/Acct
BUS	$200.00	$300.00	2
IND	$200.00	$300.00	2

Administration Costs	
Method:	Percent
Markup Percentage	25%

Description

Provide a rebate for the installation of a high efficiency urinals flushing 0.125 gpf (1 pint) or less.

Customer Classes	SF	MF	BUS	IND	IRR
	☐	☐	☑	☑	☐

End Uses	SF	MF	BUS	IND	IRR
Toilets			☐	☐	
Urinals			☑	☑	
Lavatory Faucets			☐	☐	
Showers			☐	☐	
Dishwashers			☐	☐	
Clothes Washers			☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage			☐	☐	
Baths					
Other			☐	☐	
Irrigation			☐	☐	
Pools			☐		
Wash Down					
Car Washing					
External Leakage			☐	☐	
Outdoor					
Non-Lavatory/Kitchen Faucets			☐	☐	

Comments

> Focus of Program: CII
> Rebate amount reflects the incremental purchase cost.
> Customer cost reflects the remaining fixture and installation costs and represents the valve and basin.
> Savings estimates represent 1 gpf urinal replaced by 0.125 gpf.
> Shorter measure length of 6 years due to existing code and free-ridership tendency.
> Measure implementation period is based on the current and anticipated changes in plumbing codes that would negate the need for this fixture rebates. These will be the only kinds of fixtures available. Ending this measure avoids free-ridership.

Results	
Units:	AF
Average Water Savings (afy)	
	1.504305
Lifetime Savings - Present Value ($)	
Utility	$59,814
Community	$59,814
Lifetime Costs - Present Value ($)	
Utility	$39,504
Community	$86,908
Benefit to Cost Ratio	
Utility	1.51
Community	0.69
Cost of Savings per Unit Volume ($/af)	
Utility	$847

End Use Savings Per Replacement		
Method:	Percent	
	% Savings/Acct	Avg GPD/Acct
BUS Urinals	87.5%	31.0
IND Urinals	87.5%	189.8

Targets	
Target Method:	Percentage
% of Accts Targeted / yr	0.500%
Only Effects New Accts	☐

Costs — View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$5,496	$1,374	$6,870
2021	$5,565	$1,391	$6,956
2022	$5,635	$1,409	$7,043
2023	$5,705	$1,426	$7,132
2024	$5,777	$1,444	$7,221
2025	$5,850	$1,462	$7,312
2026	$0	$0	$0
2027	$0	$0	$0
2028	$0	$0	$0
2029	$0	$0	$0
2030	$0	$0	$0
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets — View: Accounts

	BUS	IND	Total
2020	13	0	14
2021	14	0	14
2022	14	0	14
2023	14	0	14
2024	14	0	14
2025	14	0	15
2026	0	0	0
2027	0	0	0
2028	0	0	0
2029	0	0	0
2030	0	0	0
2031	0	0	0
2032	0	0	0
2033	0	0	0
2034	0	0	0
2035	0	0	0
2036	0	0	0
2037	0	0	0
2038	0	0	0
2039	0	0	0
2040	0	0	0
2041	0	0	0
2042	0	0	0
2043	0	0	0
2044	0	0	0
2045	0	0	0
2046	0	0	0
2047	0	0	0
2048	0	0	0
2049	0	0	0
2050	0	0	0

Water Savings — Units: afy

	Total Savings (afy)
2020	0.442837
2021	0.861603
2022	1.257141
2023	1.630252
2024	1.981697
2025	2.312204
2026	2.233668
2027	2.157777
2028	2.084435
2029	2.013550
2030	1.945033
2031	1.878797
2032	1.814955
2033	1.753418
2034	1.694105
2035	1.636933
2036	1.581827
2037	1.528710
2038	1.477511
2039	1.428160
2040	1.380590
2041	1.334738
2042	1.290540
2043	1.247937
2044	1.206871
2045	1.167287
2046	1.129131
2047	1.092350
2048	1.056897
2049	1.022721
2050	0.989778

Toilet Flapper Leak Alert Giveaway

Overview	
Name	Toilet Flapper Leak Alert Giveaway
Abbr	TOILALERT
Category	Default
Measure Type	Standard Measure

Time Period	
First Year	2020
Last Year	2022
Measure Length	3

Measure Life	
Permanent	☐
Years	4
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
MF	$30.00	$15.00	4
BUS	$30.00	$15.00	4

Administration Costs

Method: Percent

Markup Percentage	25%

Description

Provide toilet leak alert indication device for simple installation on toilet tanks, if flapper issue-device notifies with light and/or sound. Also responds to high water level overflow issues (silent leaks).

Customer Classes

SF	MF	BUS	IND	IRR
☐	☑	☑	☐	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets		☐	☐		
Urinals			☐		
Lavatory Faucets		☐	☐		
Showers		☐	☐		
Dishwashers		☐	☐		
Clothes Washers		☐	☐		
Process			☐		
Kitchen Spray Rinse			☐		
Internal Leakage		☑	☑		
Baths		☐			
Other		☐	☐		
Irrigation		☐	☐		
Pools		☐	☐		
Wash Down		☐			
Car Washing		☐			
External Leakage		☐	☐		
Outdoor					
Non-Lavatory/Kitchen Faucets		☐	☐		

Comments

> Focus of Program: MFR & BUS
> Opportunity to reach underserved, high density housing. ex. SB Housing Authority, apartments, hotels, senior housing.
> LeakAlertor - fully automatic leak AND overflow detection device for toilets (installs in seconds). ~ $30/ea.
> Devices typically have 3 year warranty - so assume 4 year savings life.
> Savings similar to AMI - slightly less since smaller investment and likely investment would be by bldg owner and not renter.
> Assumes 1.2 toilets per MF DU and 3.3 DU per MF account
> Assume customer cost for installation.
> Assume 25% admin cost.
> Would be a giveaway at appointments. Staff would oversee the installation of one; assume some are not installed.

Results

Units: AF

Average Water Savings (afy)	
	0.307521
Lifetime Savings - Present Value ($)	
Utility	$16,670
Community	$104,525
Lifetime Costs - Present Value ($)	
Utility	$43,163
Community	$60,428
Benefit to Cost Ratio	
Utility	0.39
Community	1.73
Cost of Savings per Unit Volume ($/af)	
Utility	$4,528

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
MF Internal Leakag	25.0%	21.5
SFR Internal Leaka	25.0%	51.7

Targets

Target Method: Percentage

% of Accts Targeted / yr	1.000%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$11,752	$2,938	$14,690
2021	$11,855	$2,964	$14,819
2022	$11,959	$2,990	$14,948
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
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	MF	BUS	Total
2020	71	27	98
2021	72	27	99
2022	72	28	100
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
2031	0	0	0
2032	0	0	0
2033	0	0	0
2034	0	0	0
2035	0	0	0
2036	0	0	0
2037	0	0	0
2038	0	0	0
2039	0	0	0
2040	0	0	0
2041	0	0	0
2042	0	0	0
2043	0	0	0
2044	0	0	0
2045	0	0	0
2046	0	0	0
2047	0	0	0
2048	0	0	0
2049	0	0	0
2050	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.786669
2021	1.581080
2022	2.383291
2023	2.383291
2024	1.596622
2025	0.802211
2026	0.000000
2027	0.000000
2028	0.000000
2029	0.000000
2030	0.000000
2031	0.000000
2032	0.000000
2033	0.000000
2034	0.000000
2035	0.000000
2036	0.000000
2037	0.000000
2038	0.000000
2039	0.000000
2040	0.000000
2041	0.000000
2042	0.000000
2043	0.000000
2044	0.000000
2045	0.000000
2046	0.000000
2047	0.000000
2048	0.000000
2049	0.000000
2050	0.000000

Hot Water on Demand Pump System Rebate

Overview

Name	Hot Water on Demand Pump System Rebate
Abbr	HOTDEM
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2024
Measure Length	5

Measure Life

Permanent ☑

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$150.00	$850.00	1
MF	$150.00	$850.00	3
BUS	$150.00	$850.00	1

Administration Costs

Method: Percent

Markup Percentage	35%

Description

Provide a rebate to equip homes with efficient hot water on demand systems. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to reduce hot water waiting times by having a an on-demand pump on a recirculation line. Can be installed on kitchen sink or master bath, wherever hot water waiting times are more than 1/2 minute. Requires an electrical outlet under the sink, which is not common on older home bathrooms but is on kitchen sinks.

Customer Classes

	SF	MF	BUS	IND	IRR
	☑	☑	☑	☐	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐		
Urinals			☐		
Lavatory Faucets	☑	☑	☑		
Showers	☑	☑	☑		
Dishwashers	☐	☐	☐		
Clothes Washers	☐	☐	☐		
Process			☐		
Kitchen Spray Rinse			☐		
Internal Leakage	☐	☐	☐		
Baths	☐	☐			
Other	☐	☐	☐		
Irrigation	☐	☐	☐		
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐		
Outdoor					
Non-Lavatory/Kitchen Faucets	☑	☑	☑		

Comments

Focus of Program: SF
> $150/unit total rebate to cover partial unit and permitting costs.
> Customer cost represents remaining balance ($600/unit+$200 installation+$200 permitting-$150 rebate)
> 35% admin cost.
> Water savings based on James Lutz 2005 "Estimating Energy and Water Losses in Residential Hot Water Distribution Systems" paper. www.allianceforwaterefficiency.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=2252
The average daily hot water loss from showers and long draws at faucets is approx. 3.7% of the average household's indoor daily water use. For SB this is ~7 gpd/SF acct or 7.5% on shower and faucet end uses. Assume same percentage savings for MF and COM.
> More information on ACT system at: www.gothotwater.com
> Might hold for neighboring water system experience results from pilot measure.

Results

Units: AF

Average Water Savings (afy)	
	2.936742
Lifetime Savings - Present Value ($)	
Utility	$112,265
Community	$268,758
Lifetime Costs - Present Value ($)	
Utility	$157,905
Community	$820,718
Benefit to Cost Ratio	
Utility	0.71
Community	0.33
Cost of Savings per Unit Volume ($/af)	
Utility	$1,734

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Lavatory Faucets	7.5%	7.8
SF Showers	7.5%	32.8
SF Non-Lavatory/Kitchen Faucets	7.5%	18.5
MF Lavatory Faucets	7.5%	18.6
BUS Lavatory Faucets	7.5%	20.7
MF Showers	7.5%	85.8
BUS Showers	7.5%	46.5
MF Non-Lavatory/Kitchen Faucets	7.5%	40.0
BUS Non-Lavatory/Kitchen Faucets	7.5%	46.5

Targets

Target Method: Percentage

% of Accts Targeted / yr	0.400%
Only Effects New Accts	☐

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$24,550	$8,592	$33,142
2021	$24,679	$8,638	$33,316
2022	$24,808	$8,683	$33,491
2023	$24,938	$8,728	$33,666
2024	$25,068	$8,774	$33,842
2025	$0	$0	$0
2026	$0	$0	$0
2027	$0	$0	$0
2028	$0	$0	$0
2029	$0	$0	$0
2030	$0	$0	$0
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	Total
2020	68	28	11	107
2021	68	29	11	107
2022	68	29	11	108
2023	68	29	11	108
2024	68	29	11	109
2025	0	0	0	0
2026	0	0	0	0
2027	0	0	0	0
2028	0	0	0	0
2029	0	0	0	0
2030	0	0	0	0
2031	0	0	0	0
2032	0	0	0	0
2033	0	0	0	0
2034	0	0	0	0
2035	0	0	0	0
2036	0	0	0	0
2037	0	0	0	0
2038	0	0	0	0
2039	0	0	0	0
2040	0	0	0	0
2041	0	0	0	0
2042	0	0	0	0
2043	0	0	0	0
2044	0	0	0	0
2045	0	0	0	0
2046	0	0	0	0
2047	0	0	0	0
2048	0	0	0	0
2049	0	0	0	0
2050	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.755385
2021	1.485939
2022	2.194419
2023	2.883259
2024	3.554612
2025	3.498983
2026	3.446807
2027	3.398096
2028	3.352559
2029	3.309931
2030	3.269974
2031	3.232754
2032	3.197905
2033	3.165238
2034	3.134580
2035	3.105774
2036	3.078675
2037	3.053155
2038	3.029092
2039	3.006378
2040	2.984913
2041	2.964605
2042	2.945468
2043	2.927417
2044	2.910376
2045	2.894273
2046	2.879045
2047	2.864631
2048	2.850977
2049	2.838032
2050	2.825749

Rain Barrel Rebate

Overview

Name	Rain Barrel Rebate
Abbr	RAINBAR
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	☐
Years	5
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$35.00	$35.00	1
MF	$35.00	$35.00	2
BUS	$35.00	$35.00	1
IRR	$35.00	$35.00	1

Administration Costs

Method: Percent

Markup Percentage	70%

Description

Provide an incentive for installation of rain barrels to offset irrigation use.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☐	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐		
Urinals			☐		
Lavatory Faucets	☐	☐	☐		
Showers	☐	☐	☐		
Dishwashers	☐	☐	☐		
Clothes Washers	☐	☐	☐		
Process			☐		
Kitchen Spray Rinse			☐		
Internal Leakage	☐	☐	☐		
Baths	☐	☐			
Other	☐	☐	☐		
Irrigation	☑	☑	☑		☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐		☐
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐		

Comments

> Modeled after SoCal Water Smart Program https://socalwatersmart.com/en/residential/rebates/available-rebates/rain-barrels-cisterns/
> Photos and online or mail-in application
> Max 2 barrels per property, 50 gallon minimum.
> Admin costs reflect 30 min of staff time to process receipt and generate rebate check; markup of 70% = $24 (or 30 min) of admin time per rebate.
> 2% savings calculated with Maddaus Rainwater Harvesting Calculator based on local SB rainfall, ET, irrigation needs, average roof area, and collection coefficient.
> Targets based on Soquel Creek WD uptake, likely not to see much BUS uptake

Results

Units: AF

Average Water Savings (afy)	
	0.700926
Lifetime Savings – Present Value ($)	
Utility	$11,892
Community	$11,892
Lifetime Costs – Present Value ($)	
Utility	$124,401
Community	$197,578
Benefit to Cost Ratio	
Utility	0.10
Community	0.06
Cost of Savings per Unit Volume ($/af)	
Utility	$5,725

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Irrigation	2.0%	55.8
MF Irrigation	2.0%	19.3
BUS Irrigation	2.0%	74.1
IRR Irrigation	2.0%	514.5

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$3,385	$2,370	$5,755
2021	$3,396	$2,377	$5,773
2022	$3,407	$2,385	$5,792
2023	$3,418	$2,392	$5,810
2024	$3,429	$2,400	$5,829
2025	$3,440	$2,408	$5,848
2026	$3,451	$2,416	$5,866
2027	$3,567	$2,497	$6,064
2028	$3,578	$2,505	$6,083
2029	$3,589	$2,512	$6,102
2030	$3,600	$2,520	$6,121
2031	$3,612	$2,528	$6,140
2032	$3,623	$2,536	$6,159
2033	$3,634	$2,544	$6,178
2034	$3,645	$2,552	$6,197
2035	$3,657	$2,560	$6,217
2036	$3,668	$2,568	$6,236
2037	$3,785	$2,649	$6,434
2038	$3,796	$2,657	$6,454
2039	$3,808	$2,666	$6,474
2040	$3,820	$2,674	$6,493
2041	$3,831	$2,682	$6,513
2042	$3,843	$2,690	$6,533
2043	$3,855	$2,698	$6,553
2044	$3,867	$2,707	$6,573
2045	$3,879	$2,715	$6,594
2046	$3,891	$2,723	$6,614
2047	$3,903	$2,732	$6,634
2048	$3,915	$2,740	$6,655
2049	$3,927	$2,749	$6,676
2050	$0	$0	$0

Targets

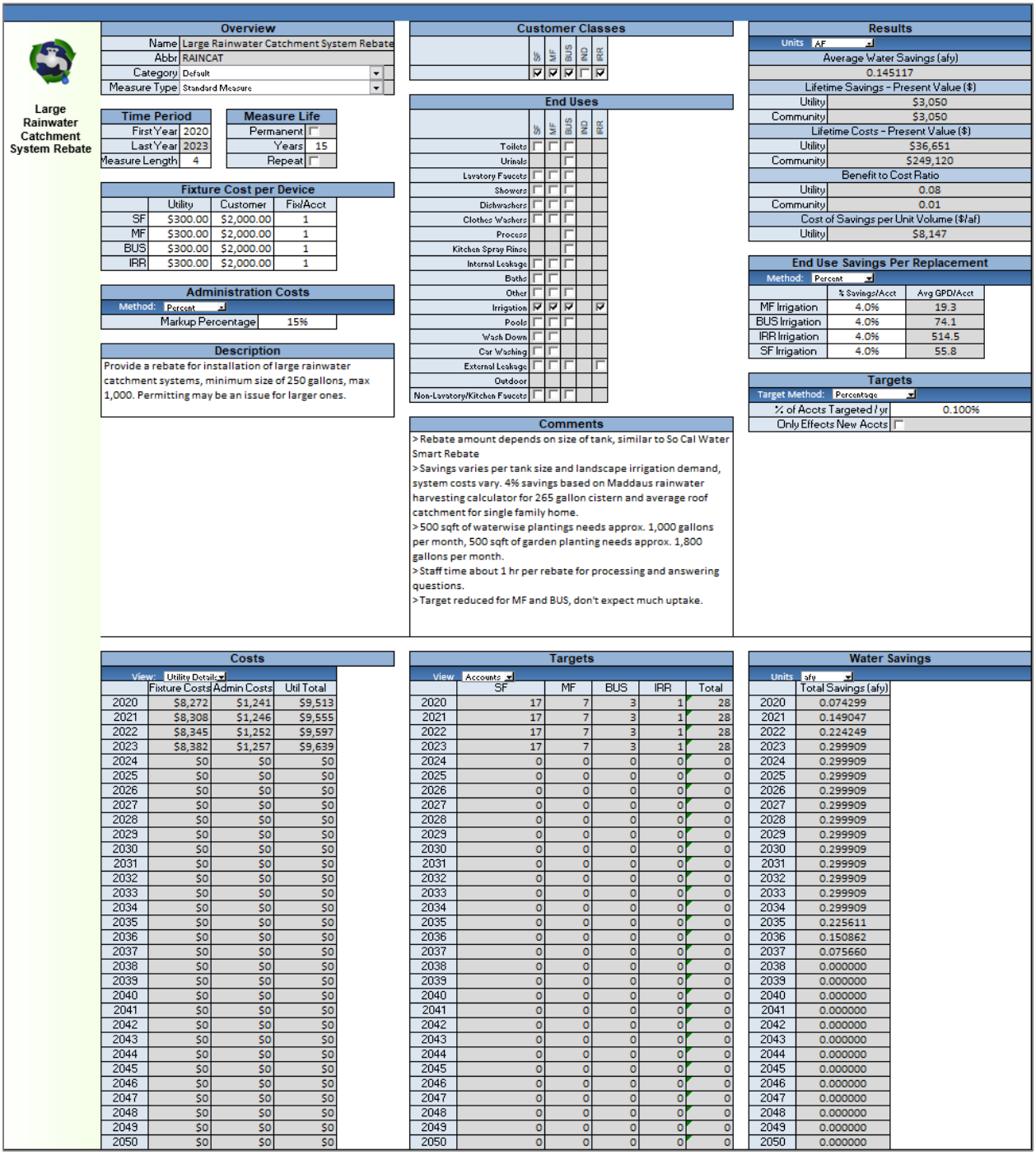
View: Accounts

	SF	MF	BUS	IRR	Total
2020	68	10	5	4	87
2021	68	10	5	4	87
2022	69	10	5	4	87
2023	69	10	5	4	88
2024	69	10	5	4	88
2025	69	10	5	4	88
2026	70	10	5	4	89
2027	70	11	6	4	91
2028	70	11	6	4	91
2029	70	11	6	4	92
2030	71	11	6	4	92
2031	71	11	6	4	92
2032	71	11	6	4	93
2033	71	11	6	4	93
2034	72	11	6	4	93
2035	72	11	6	5	93
2036	72	11	6	5	94
2037	72	12	7	5	96
2038	73	12	7	5	96
2039	73	12	7	5	97
2040	73	12	7	5	97
2041	73	12	7	5	97
2042	74	12	7	5	98
2043	74	12	7	5	98
2044	74	12	7	5	98
2045	74	12	7	5	99
2046	75	12	7	5	99
2047	75	12	7	6	100
2048	75	12	7	6	100
2049	75	12	7	6	100
2050	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.133393
2021	0.267759
2022	0.403108
2023	0.539452
2024	0.676803
2025	0.681780
2026	0.686817
2027	0.693930
2028	0.701105
2029	0.708343
2030	0.715645
2031	0.723011
2032	0.728429
2033	0.733913
2034	0.739466
2035	0.745088
2036	0.750781
2037	0.758562
2038	0.766416
2039	0.774345
2040	0.782349
2041	0.790431
2042	0.796576
2043	0.802801
2044	0.809108
2045	0.815497
2046	0.821970
2047	0.828529
2048	0.835174
2049	0.841908
2050	0.676219



Large Rainwater Catchment System Rebate

Overview

Name	Large Rainwater Catchment System Rebate
Abbr	RAINCAT
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2023
Measure Length	4

Measure Life

Permanent	☐
Years	15
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$300.00	$2,000.00	1
MF	$300.00	$2,000.00	1
BUS	$300.00	$2,000.00	1
IRR	$300.00	$2,000.00	1

Administration Costs

Method: Percent

Markup Percentage	15%

Description

Provide a rebate for installation of large rainwater catchment systems, minimum size of 250 gallons, max 1,000. Permitting may be an issue for larger ones.

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☑	☐	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐		
Urinals			☐		
Lavatory Faucets	☐	☐	☐		
Showers	☐	☐	☐		
Dishwashers	☐	☐	☐		
Clothes Washers	☐	☐	☐		
Process			☐		
Kitchen Spray Rinse			☐		
Internal Leakage	☐	☐	☐		
Baths	☐	☐			
Other	☐	☐	☐		
Irrigation	☑	☑	☑		☑
Pools	☐	☐	☐		
Wash Down	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐		☐
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐		

Comments

> Rebate amount depends on size of tank, similar to So Cal Water Smart Rebate
> Savings varies per tank size and landscape irrigation demand, system costs vary. 4% savings based on Maddaus rainwater harvesting calculator for 265 gallon cistern and average roof catchment for single family home.
> 500 sqft of waterwise plantings needs approx. 1,000 gallons per month, 500 sqft of garden planting needs approx. 1,800 gallons per month.
> Staff time about 1 hr per rebate for processing and answering questions.
> Target reduced for MF and BUS, don't expect much uptake.

Results

Units: AF

Average Water Savings (afy)	
	0.145117
Lifetime Savings - Present Value ($)	
Utility	$3,050
Community	$3,050
Lifetime Costs - Present Value ($)	
Utility	$36,651
Community	$249,120
Benefit to Cost Ratio	
Utility	0.08
Community	0.01
Cost of Savings per Unit Volume ($/af)	
Utility	$8,147

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
MF Irrigation	4.0%	19.3
BUS Irrigation	4.0%	74.1
IRR Irrigation	4.0%	514.5
SF Irrigation	4.0%	55.8

Targets

Target Method: Percentage

% of Accts Targeted / yr	0.100%
Only Effects New Accts	☐

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$8,272	$1,241	$9,513
2021	$8,308	$1,246	$9,555
2022	$8,345	$1,252	$9,597
2023	$8,382	$1,257	$9,639
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
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	SF	MF	BUS	IRR	Total
2020	17	7	3	1	28
2021	17	7	3	1	28
2022	17	7	3	1	28
2023	17	7	3	1	28
2024	0	0	0	0	0
2025	0	0	0	0	0
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
2031	0	0	0	0	0
2032	0	0	0	0	0
2033	0	0	0	0	0
2034	0	0	0	0	0
2035	0	0	0	0	0
2036	0	0	0	0	0
2037	0	0	0	0	0
2038	0	0	0	0	0
2039	0	0	0	0	0
2040	0	0	0	0	0
2041	0	0	0	0	0
2042	0	0	0	0	0
2043	0	0	0	0	0
2044	0	0	0	0	0
2045	0	0	0	0	0
2046	0	0	0	0	0
2047	0	0	0	0	0
2048	0	0	0	0	0
2049	0	0	0	0	0
2050	0	0	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.074299
2021	0.149047
2022	0.224249
2023	0.299909
2024	0.299909
2025	0.299909
2026	0.299909
2027	0.299909
2028	0.299909
2029	0.299909
2030	0.299909
2031	0.299909
2032	0.299909
2033	0.299909
2034	0.299909
2035	0.225611
2036	0.150862
2037	0.075660
2038	0.000000
2039	0.000000
2040	0.000000
2041	0.000000
2042	0.000000
2043	0.000000
2044	0.000000
2045	0.000000
2046	0.000000
2047	0.000000
2048	0.000000
2049	0.000000
2050	0.000000

Pre-Rinse Spray Nozzle Giveaway

Overview

Name	Pre-Rinse Spray Nozzle Giveaway
Abbr	SPRAYNOZ
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2021
Last Year	2023
Measure Length	3

Measure Life

Permanent ☑

Fixture Cost per Device

	Utility	Customer	Fix/Acct
BUS	$60.00	$50.00	2
IND	$60.00	$50.00	2

Administration Costs

Method: Percent

Markup Percentage	35%

Description

Provide free 1.15 gpm (or lower) spray nozzles and possibly free installation for the rinse and clean operation in restaurants and other commercial kitchens. Thousands have been replaced in California going door to door, very cost-effective because saves hot water.

Customer Classes

	SF	MF	BUS	IND	IRR
	☐	☐	☑	☑	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets			☐	☐	
Urinals			☐	☐	
Lavatory Faucets			☐	☐	
Showers			☐	☐	
Dishwashers			☐	☐	
Clothes Washers			☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☑	☑	
Internal Leakage			☐	☐	
Baths					
Other			☐	☐	
Irrigation			☐	☐	
Pools			☐		
Wash Down					
Car Washing					
External Leakage			☐	☐	
Outdoor					
Non-Lavatory/Kitchen Faucets			☐	☐	

Comments

> Focus of Program: CII
> Utility costs are based on $60 for valve and utility staff time for door to distribution (15-30 min/account).
> Customer costs reflect installation.
> Savings assume 1.15 gpm nozzles are replacing 50% 2.5 gpm and 50% 5.0 gpm nozzles. And only 65% are installed.
> https://fishnick.com/equipment/sprayvalves/
> Assume 1-3 fixtures per account (1.5 avg) since small restaurants will only have one, but grocery stores might have 5 or more. Measure will allow more than one fixture per account.
> The City plans to make a concerted effort to target many over short period of time. Estimate 350 - 400 restaurants/food service in SB have pre-rinse nozzle (per City Trash & Recycling estimate)
> Measure implementation period is based on the current and anticipated changes in plumbing codes that would negate the need for this fixture rebates. Ending this measure avoids free-ridership.

Results

Units: AF

Average Water Savings (afy)	4.097481
Lifetime Savings - Present Value ($)	
Utility	$153,422
Community	$1,252,137
Lifetime Costs - Present Value ($)	
Utility	$38,970
Community	$63,025
Benefit to Cost Ratio	
Utility	3.94
Community	19.87
Cost of Savings per Unit Volume ($/af)	
Utility	$307

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
BUS Kitchen Spray Rinse	42.6%	25.8
IND Kitchen Spray Rinse	42.6%	146.0

Targets

Target Method: Percentage

% of Accts Targeted / yr	4.000%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$0	$0	$0
2021	$10,083	$3,529	$13,611
2022	$10,209	$3,573	$13,782
2023	$10,337	$3,618	$13,955
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
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	BUS	IND	Total
2020	0	0	0
2021	109	2	111
2022	110	2	113
2023	112	2	114
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
2031	0	0	0
2032	0	0	0
2033	0	0	0
2034	0	0	0
2035	0	0	0
2036	0	0	0
2037	0	0	0
2038	0	0	0
2039	0	0	0
2040	0	0	0
2041	0	0	0
2042	0	0	0
2043	0	0	0
2044	0	0	0
2045	0	0	0
2046	0	0	0
2047	0	0	0
2048	0	0	0
2049	0	0	0
2050	0	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.000000
2021	1.442270
2022	2.902634
2023	4.381321
2024	4.381321
2025	4.381321
2026	4.381321
2027	4.381321
2028	4.381321
2029	4.381321
2030	4.381321
2031	4.381321
2032	4.381321
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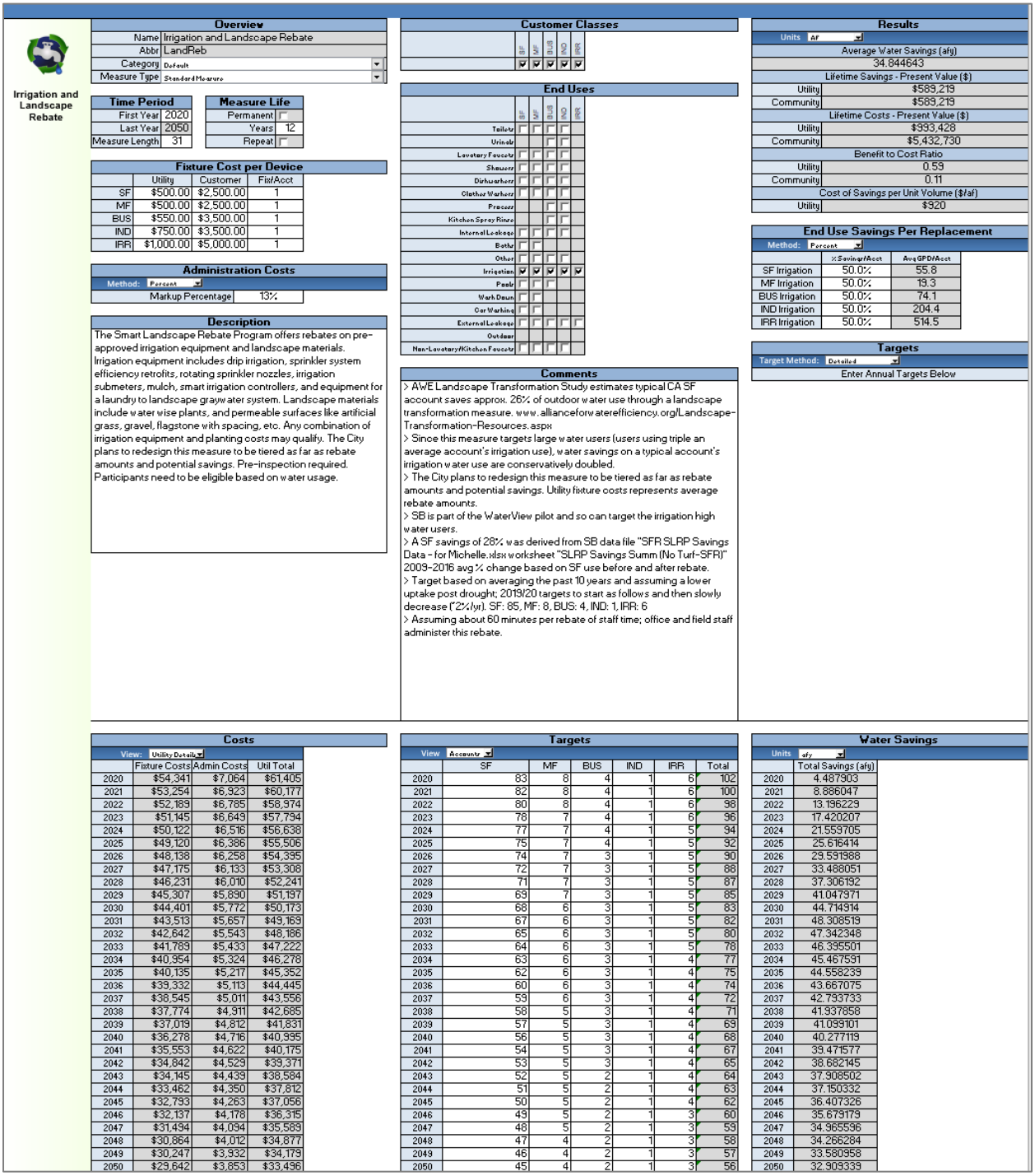


Irrigation and Landscape Rebate

Overview

Name	Irrigation and Landscape Rebate
Abbr	LandReb
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	☐
Years	12
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$500.00	$2,500.00	1
MF	$500.00	$2,500.00	1
BUS	$550.00	$3,500.00	1
IND	$750.00	$3,500.00	1
IRR	$1,000.00	$5,000.00	1

Administration Costs

Method: Percent

Markup Percentage	13%

Description

The Smart Landscape Rebate Program offers rebates on pre-approved irrigation equipment and landscape materials. Irrigation equipment includes drip irrigation, sprinkler system efficiency retrofits, rotating sprinkler nozzles, irrigation submeters, mulch, smart irrigation controllers, and equipment for a laundry to landscape graywater system. Landscape materials include water wise plants, and permeable surfaces like artificial grass, gravel, flagstone with spacing, etc. Any combination of irrigation equipment and planting costs may qualify. The City plans to redesign this measure to be tiered as far as rebate amounts and potential savings. Pre-inspection required. Participants need to be eligible based on water usage.

Customer Classes

	SF	MF	BUS	IND	IRR
	☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☐	☐	☐	☐	
Urinals			☐	☐	
Lavatory Faucets	☐	☐	☐	☐	
Showers	☐	☐	☐	☐	
Dishwashers	☐	☐	☐	☐	
Clothes Washers	☐	☐	☐	☐	
Process			☐	☐	
Kitchen Spray Rinse			☐	☐	
Internal Leakage	☐	☐	☐	☐	
Baths	☐	☐			
Other	☐	☐	☐	☐	
Irrigation	☑	☑	☑	☑	☑
Pools	☐	☐	☐		
Washdown	☐	☐			
Car Washing	☐	☐			
External Leakage	☐	☐	☐	☐	☐
Outdoor					
Non-Lavatory/Kitchen Faucets	☐	☐	☐	☐	

Comments

> AWE Landscape Transformation Study estimates typical CA SF account saves approx. 26% of outdoor water use through a landscape transformation measure. www.allianceforwaterefficiency.org/Landscape-Transformation-Resources.aspx
> Since this measure targets large water users (users using triple an average account's irrigation use), water savings on a typical account's irrigation water use are conservatively doubled.
> The City plans to redesign this measure to be tiered as far as rebate amounts and potential savings. Utility fixture costs represents average rebate amounts.
> SB is part of the WaterView pilot and so can target the irrigation high water users.
> A SF savings of 28% was derived from SB data file "SFR SLRP Savings Data - for Michelle.xlsx worksheet "SLRP Savings Summ (No Turf-SFR)" 2009-2016 avg % change based on SF use before and after rebate.
> Target based on averaging the past 10 years and assuming a lower uptake post drought; 2019/20 targets to start as follows and then slowly decrease (~2%/yr). SF: 85, MF: 8, BUS: 4, IND: 1, IRR: 6
> Assuming about 60 minutes per rebate of staff time; office and field staff administer this rebate.

Results

Units: AF

Average Water Savings (afy)	
	34.844643
Lifetime Savings - Present Value ($)	
Utility	$589,219
Community	$589,219
Lifetime Costs - Present Value ($)	
Utility	$993,428
Community	$5,432,730
Benefit to Cost Ratio	
Utility	0.59
Community	0.11
Cost of Savings per Unit Volume ($/af)	
Utility	$920

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Irrigation	50.0%	55.8
MF Irrigation	50.0%	19.3
BUS Irrigation	50.0%	74.1
IND Irrigation	50.0%	204.4
IRR Irrigation	50.0%	514.5

Targets

Target Method: Detailed

Enter Annual Targets Below

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$54,341	$7,064	$61,405
2021	$53,254	$6,923	$60,177
2022	$52,189	$6,785	$58,974
2023	$51,145	$6,649	$57,794
2024	$50,122	$6,516	$56,638
2025	$49,120	$6,386	$55,506
2026	$48,138	$6,258	$54,395
2027	$47,175	$6,133	$53,308
2028	$46,231	$6,010	$52,241
2029	$45,307	$5,890	$51,197
2030	$44,401	$5,772	$50,173
2031	$43,513	$5,657	$49,169
2032	$42,642	$5,543	$48,186
2033	$41,789	$5,433	$47,222
2034	$40,954	$5,324	$46,278
2035	$40,135	$5,217	$45,352
2036	$39,332	$5,113	$44,445
2037	$38,545	$5,011	$43,556
2038	$37,774	$4,911	$42,685
2039	$37,019	$4,812	$41,831
2040	$36,278	$4,716	$40,995
2041	$35,553	$4,622	$40,175
2042	$34,842	$4,529	$39,371
2043	$34,145	$4,439	$38,584
2044	$33,462	$4,350	$37,812
2045	$32,793	$4,263	$37,056
2046	$32,137	$4,178	$36,315
2047	$31,494	$4,094	$35,589
2048	$30,864	$4,012	$34,877
2049	$30,247	$3,932	$34,179
2050	$29,642	$3,853	$33,496

Targets

View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	83	8	4	1	6	102
2021	82	8	4	1	6	100
2022	80	8	4	1	6	98
2023	78	7	4	1	6	96
2024	77	7	4	1	5	94
2025	75	7	4	1	5	92
2026	74	7	3	1	5	90
2027	72	7	3	1	5	88
2028	71	7	3	1	5	87
2029	69	7	3	1	5	85
2030	68	6	3	1	5	83
2031	67	6	3	1	5	82
2032	65	6	3	1	5	80
2033	64	6	3	1	5	78
2034	63	6	3	1	4	77
2035	62	6	3	1	4	75
2036	60	6	3	1	4	74
2037	59	6	3	1	4	72
2038	58	5	3	1	4	71
2039	57	5	3	1	4	69
2040	56	5	3	1	4	68
2041	54	5	3	1	4	67
2042	53	5	3	1	4	65
2043	52	5	2	1	4	64
2044	51	5	2	1	4	63
2045	50	5	2	1	4	62
2046	49	5	2	1	3	60
2047	48	5	2	1	3	59
2048	47	4	2	1	3	58
2049	46	4	2	1	3	57
2050	45	4	2	1	3	56

Water Savings

Units: afy

	Total Savings (afy)
2020	4.487903
2021	8.886047
2022	13.196229
2023	17.420207
2024	21.553705
2025	25.616414
2026	29.591388
2027	33.488051
2028	37.306192
2029	41.047971
2030	44.714914
2031	48.308513
2032	47.342348
2033	46.395501
2034	45.467591
2035	44.558239
2036	43.667075
2037	42.793733
2038	41.937858
2039	41.099101
2040	40.277119
2041	39.471577
2042	38.682145
2043	37.908502
2044	37.150332
2045	36.407326
2046	35.679173
2047	34.965596
2048	34.266284
2049	33.580958
2050	32.909339

School Education

Overview	
Name	School Education
Abbr	SCHOOL_ED
Category	Default
Measure Type	Standard Measure

Time Period	
First Year	2020
Last Year	2050
Measure Length	31

Measure Life	
Permanent	☐
Years	5
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$12.00	$0.00	1
MF	$12.00	$0.00	1

Administration Costs

Method: Percent

Markup Percentage	30%

Description

This measure includes the City's school education initiatives. Free presentations about Santa Barbara's water supply, water conservation, creeks and ocean water quality are available and tailored to any group's age or class objectives and are aligned to CA content standards and the EEI curriculum. The City offers schools presentations, field trips & assemblies, contests, teacher training, and multiple online and hands-on resources. A high school video contest and 7th & 8th grade science fair awards are also offered.
The Santa Barbara LivingWise® Program is also included in this measure and is a water and energy efficiency education program, designed to generate immediate and long-term resource savings by bringing interactive, real-world education home to students and their families. Taught in grade 6, the measure begins with classroom discussions in a Student Guide that provide the foundations of using energy and water efficiently. The LivingWise Kit and Student Workbook comprise the take-home portion of the measure. Students receive a kit containing high-efficiency fixtures they install within their homes. With some help, students install the kit elements and complete a home survey. At this time only indoor water use is targeted. This is a joint initiative by the City of Santa Barbara Public Works Department and Southern California Gas Company. An in-class presentation by City staff coincides with the kit to educate students on where their water comes from

Customer Classes

SF	MF	BUS	IND	IRR
☑	☑	☐	☐	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☑	☑			
Urinals					
Lavatory Faucets	☑	☑			
Showers	☑	☑			
Dishwashers	☑	☑			
Clothes Washers	☑	☑			
Process					
Kitchen Spray Rinse					
Internal Leakage	☑	☑			
Baths	☑	☑			
Other	☑	☑			
Irrigation	☑	☑			
Pools	☑	☑			
Wash Down	☑	☑			
Car Washing	☑	☑			
External Leakage	☑	☑			
Outdoor					
Non-Lavatory/Kitchen Faucets	☑	☑			

Comments

> The City spends $18k total per year on all school education initiatives and targets ~ 1,500 students/yr.
> Admin markup represents ~ 1.5hr of staff time per class (25 students) = ~ $100 per 25 students.
> Measure design (targets, savings, etc.) assumes a third of students participate in the LivingWise® Program. 2013-2018 Summary Report savings take into account average household size, fixture use duration, fixture uses per day per person, average number of full bathrooms per home, average fixture flow rate, the retrofit fixture flow rate, and reported installation rates. Not all fixtures were replaced. Retrofitted fixture flow rates include 0.7-1.15 gpm showerheads, 1.5 gpm kitchen aerators, and 0.5-1.0 gpm bathroom aerators. Lower flow rates were installed in more recent years.
> Staff time is 1.5 hours, kits are about $19 each.
> Measure design will target all end uses, since the profile of savings may change year to year and since students are educated on water-efficient practices affecting all end uses.
> MF accounts have lower saving since there are typically numerous household units per account.
> Non-LivingWise® students (approx. 2/3) receive: 3-5th grades small kit (dye tablet and aerator); pre-3rd get coloring books.

Results

Units: AF

Average Water Savings (afy)	
	62.049825
Lifetime Savings - Present Value ($)	
Utility	$2,251,464
Community	$5,815,471
Lifetime Costs - Present Value ($)	
Utility	$519,717
Community	$519,717
Benefit to Cost Ratio	
Utility	4.33
Community	11.19
Cost of Savings per Unit Volume ($/af)	
Utility	$270

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Toilets	1.0%	24.2
MF Toilets	1.0%	62.9
SF Lavatory Faucets	11.7%	7.8
MF Lavatory Faucets	5.0%	18.6
SF Showers	4.7%	32.8
MF Showers	2.3%	85.8
SF Dishwashers	1.0%	2.8
MF Dishwashers	1.0%	2.9
SF Clothes Washers	1.0%	21.4
MF Clothes Washers	1.0%	51.5
SF Internal Leakage	10.0%	19.9
MF Internal Leakage	10.0%	21.5
SF Baths	1.0%	4.3
MF Baths	1.0%	1.4
SF Other	1.0%	10.7
MF Other	1.0%	1.4
SF Irrigation	1.0%	55.8
MF Irrigation	1.0%	19.3
SF Pools	1.0%	0.7
MF Pools	1.0%	0.5
SF Wash Down	1.0%	4.9
MF Wash Down	1.0%	0.9
SF Car Washing	1.0%	4.9
MF Car Washing	1.0%	0.9
SF External Leakage	1.0%	3.5
MF External Leakage	1.0%	1.6
Non-Lavatory/Kitchen Fauc	13.0%	18.5
Non-Lavatory/Kitchen Fauc	8.0%	40.0

Targets

Target Method: Percentage

% of Accts Targeted / yr	6.500%
Only Effects New Accts	☐

Costs

View: Utility Details

	Fixture Costs	Admin Costs	Util Total
2020	$18,739	$5,622	$24,360
2021	$18,799	$5,640	$24,438
2022	$18,859	$5,658	$24,516
2023	$18,919	$5,676	$24,595
2024	$18,979	$5,694	$24,673
2025	$19,039	$5,712	$24,751
2026	$19,099	$5,730	$24,829
2027	$19,159	$5,748	$24,907
2028	$19,219	$5,766	$24,985
2029	$19,279	$5,784	$25,063
2030	$19,339	$5,802	$25,141
2031	$19,386	$5,816	$25,201
2032	$19,432	$5,830	$25,262
2033	$19,479	$5,844	$25,322
2034	$19,525	$5,858	$25,383
2035	$19,572	$5,872	$25,443
2036	$19,618	$5,885	$25,504
2037	$19,665	$5,899	$25,564
2038	$19,711	$5,913	$25,625
2039	$19,758	$5,927	$25,685
2040	$19,804	$5,941	$25,745
2041	$19,851	$5,955	$25,806
2042	$19,897	$5,969	$25,866
2043	$19,944	$5,983	$25,927
2044	$19,990	$5,997	$25,987
2045	$20,037	$6,011	$26,048
2046	$20,083	$6,025	$26,108
2047	$20,130	$6,039	$26,168
2048	$20,176	$6,053	$26,229
2049	$20,223	$6,067	$26,289
2050	$20,269	$6,081	$26,350

Targets

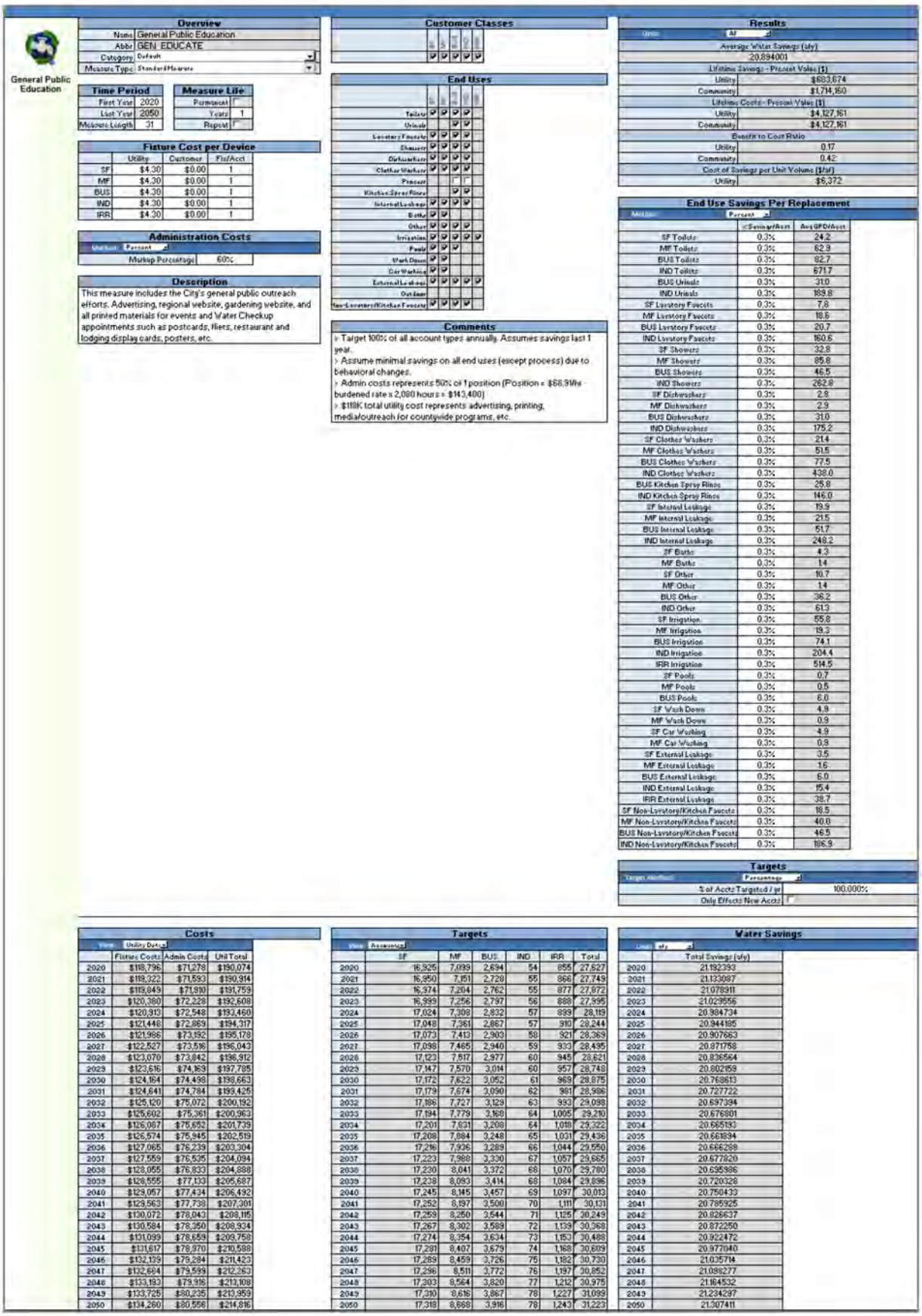
View: Accounts

	SF	MF	Total
2020	1,100	461	1,562
2021	1,102	465	1,567
2022	1,103	468	1,572
2023	1,105	472	1,577
2024	1,107	475	1,582
2025	1,108	478	1,587
2026	1,110	482	1,592
2027	1,111	485	1,597
2028	1,113	489	1,602
2029	1,115	492	1,607
2030	1,116	495	1,612
2031	1,117	499	1,615
2032	1,117	502	1,619
2033	1,118	506	1,623
2034	1,118	509	1,627
2035	1,119	512	1,631
2036	1,119	516	1,635
2037	1,119	519	1,639
2038	1,120	523	1,643
2039	1,120	526	1,646
2040	1,121	529	1,650
2041	1,121	533	1,654
2042	1,122	536	1,658
2043	1,122	540	1,662
2044	1,123	543	1,666
2045	1,123	546	1,670
2046	1,124	550	1,674
2047	1,124	553	1,677
2048	1,125	557	1,681
2049	1,125	560	1,685
2050	1,126	563	1,689

Water Savings

Units: afy

	Total Savings (afy)
2020	14.551184
2021	28.755366
2022	42.652801
2023	56.278615
2024	69.663441
2025	69.145076
2026	68.669181
2027	68.230802
2028	67.826459
2029	67.453004
2030	67.107588
2031	66.783298
2032	66.487312
2033	66.216434
2034	65.967762
2035	65.738665
2036	65.535440
2037	65.355792
2038	65.197641
2039	65.059107
2040	64.938483
2041	64.834223
2042	64.746206
2043	64.673060
2044	64.613540
2045	64.566514
2046	64.530956
2047	64.505931
2048	64.490590
2049	64.484159
2050	64.485934



General Public Education

Overview

Name	General Public Education
Abbr	GEN_EDUCATE
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2020
Last Year	2050
Measure Length	31

Measure Life

Permanent	☐
Years	1
Report	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
SF	$4.30	$0.00	1
MF	$4.30	$0.00	1
BUS	$4.30	$0.00	1
IND	$4.30	$0.00	1
IRR	$4.30	$0.00	1

Administration Costs

Markup: Percent

Markup Percentage	60%

Description

This measure includes the City's general public outreach efforts. Advertising, regional website, gardening website, and all printed materials for events and Water Checkup appointments such as postcards, fliers, restaurant and lodging display cards, posters, etc.

Customer Classes

	SF	MF	BUS	IND	IRR
	☑	☑	☑	☑	☑

End Uses

	SF	MF	BUS	IND	IRR
Toilets	☑	☑	☑	☑	
Urinals			☑	☑	
Lavatory Faucets	☑	☑	☑	☑	
Showers	☑	☑	☑	☑	
Dishwashers	☑	☑	☑	☑	
Clothes Washers	☑	☑	☑	☑	
Process			☐	☐	
Kitchen Spray Rinse			☑	☑	
Internal Leakage	☑	☑	☑	☑	
Baths	☑	☑			
Other	☑	☑	☑	☑	
Irrigation	☑	☑	☑	☑	☑
Pools	☑	☑	☑		
Wash Down	☑	☑			
Car Washing	☑	☑			
External Leakage	☑	☑	☑	☑	☑
Outdoor					
Non-Lavatory/Kitchen Faucets	☑	☑	☑	☑	

Comments

› Target 100% of all account types annually. Assumes savings last 1 year.
› Assume minimal savings on all end uses (except process) due to behavioral changes.
› Admin costs represents 50% of 1 position (Position = $68.9/hr burdened rate x 2,080 hours = $143,400)
› $119K total utility cost represents: advertising, printing, media/outreach for countywide programs, etc.

Results

Units: AF

Average Water Savings (afy)	
	20,894001
Lifetime Savings - Present Value ($)	
Utility	$683,674
Community	$1,714,160
Lifetime Costs - Present Value ($)	
Utility	$4,127,151
Community	$4,127,151
Benefit to Cost Ratio	
Utility	0.17
Community	0.42
Cost of Savings per Unit Volume ($/af)	
Utility	$6,372

End Use Savings Per Replacement

Method: Percent

	% Savings/Acct	Avg GPD/Acct
SF Toilets	0.3%	24.2
MF Toilets	0.3%	62.9
BUS Toilets	0.3%	82.7
IND Toilets	0.3%	671.7
BUS Urinals	0.3%	31.0
IND Urinals	0.3%	189.8
SF Lavatory Faucets	0.3%	7.8
MF Lavatory Faucets	0.3%	18.6
BUS Lavatory Faucets	0.3%	20.7
IND Lavatory Faucets	0.3%	160.6
SF Showers	0.3%	32.8
MF Showers	0.3%	85.8
BUS Showers	0.3%	46.5
IND Showers	0.3%	262.8
SF Dishwashers	0.3%	2.8
MF Dishwashers	0.3%	2.9
BUS Dishwashers	0.3%	31.0
IND Dishwashers	0.3%	175.2
SF Clothes Washers	0.3%	21.4
MF Clothes Washers	0.3%	51.5
BUS Clothes Washers	0.3%	77.5
IND Clothes Washers	0.3%	438.0
BUS Kitchen Spray Rinse	0.3%	25.8
IND Kitchen Spray Rinse	0.3%	146.0
SF Internal Leakage	0.3%	19.9
MF Internal Leakage	0.3%	21.5
BUS Internal Leakage	0.3%	51.7
IND Internal Leakage	0.3%	248.2
SF Baths	0.3%	4.3
MF Baths	0.3%	1.4
SF Other	0.3%	10.7
MF Other	0.3%	1.4
BUS Other	0.3%	36.2
IND Other	0.3%	61.3
SF Irrigation	0.3%	55.8
MF Irrigation	0.3%	19.3
BUS Irrigation	0.3%	74.1
IND Irrigation	0.3%	204.4
IRR Irrigation	0.3%	514.5
SF Pools	0.3%	0.7
MF Pools	0.3%	0.5
BUS Pools	0.3%	6.0
SF Wash Down	0.3%	4.8
MF Wash Down	0.3%	0.9
SF Car Washing	0.3%	4.8
MF Car Washing	0.3%	0.8
SF External Leakage	0.3%	3.5
MF External Leakage	0.3%	1.6
BUS External Leakage	0.3%	6.0
IND External Leakage	0.3%	15.4
IRR External Leakage	0.3%	38.7
SF Non-Lavatory/Kitchen Faucets	0.3%	18.5
MF Non-Lavatory/Kitchen Faucets	0.3%	40.0
BUS Non-Lavatory/Kitchen Faucets	0.3%	46.5
IND Non-Lavatory/Kitchen Faucets	0.3%	186.9

Targets

Target Method: Percentage

% of Accts Targeted / yr	100.000%
Only Effects New Accts	☐

Costs

View: Utility Dollars

	Fixture Costs	Admin Costs	Util Total
2020	$118,796	$71,278	$190,074
2021	$119,322	$71,593	$190,914
2022	$119,849	$71,910	$191,759
2023	$120,380	$72,228	$192,608
2024	$120,913	$72,548	$193,460
2025	$121,448	$72,869	$194,317
2026	$121,986	$73,192	$195,178
2027	$122,527	$73,516	$196,043
2028	$123,070	$73,842	$196,912
2029	$123,616	$74,169	$197,785
2030	$124,164	$74,498	$198,663
2031	$124,641	$74,784	$199,425
2032	$125,120	$75,072	$200,192
2033	$125,602	$75,361	$200,963
2034	$126,087	$75,652	$201,739
2035	$126,574	$75,945	$202,519
2036	$127,065	$76,239	$203,304
2037	$127,559	$76,535	$204,094
2038	$128,055	$76,833	$204,888
2039	$128,555	$77,133	$205,687
2040	$129,057	$77,434	$206,492
2041	$129,563	$77,738	$207,301
2042	$130,072	$78,043	$208,115
2043	$130,584	$78,350	$208,934
2044	$131,099	$78,659	$209,758
2045	$131,617	$78,970	$210,588
2046	$132,139	$79,284	$211,423
2047	$132,664	$79,599	$212,263
2048	$133,193	$79,916	$213,108
2049	$133,725	$80,235	$213,959
2050	$134,260	$80,556	$214,816

Targets

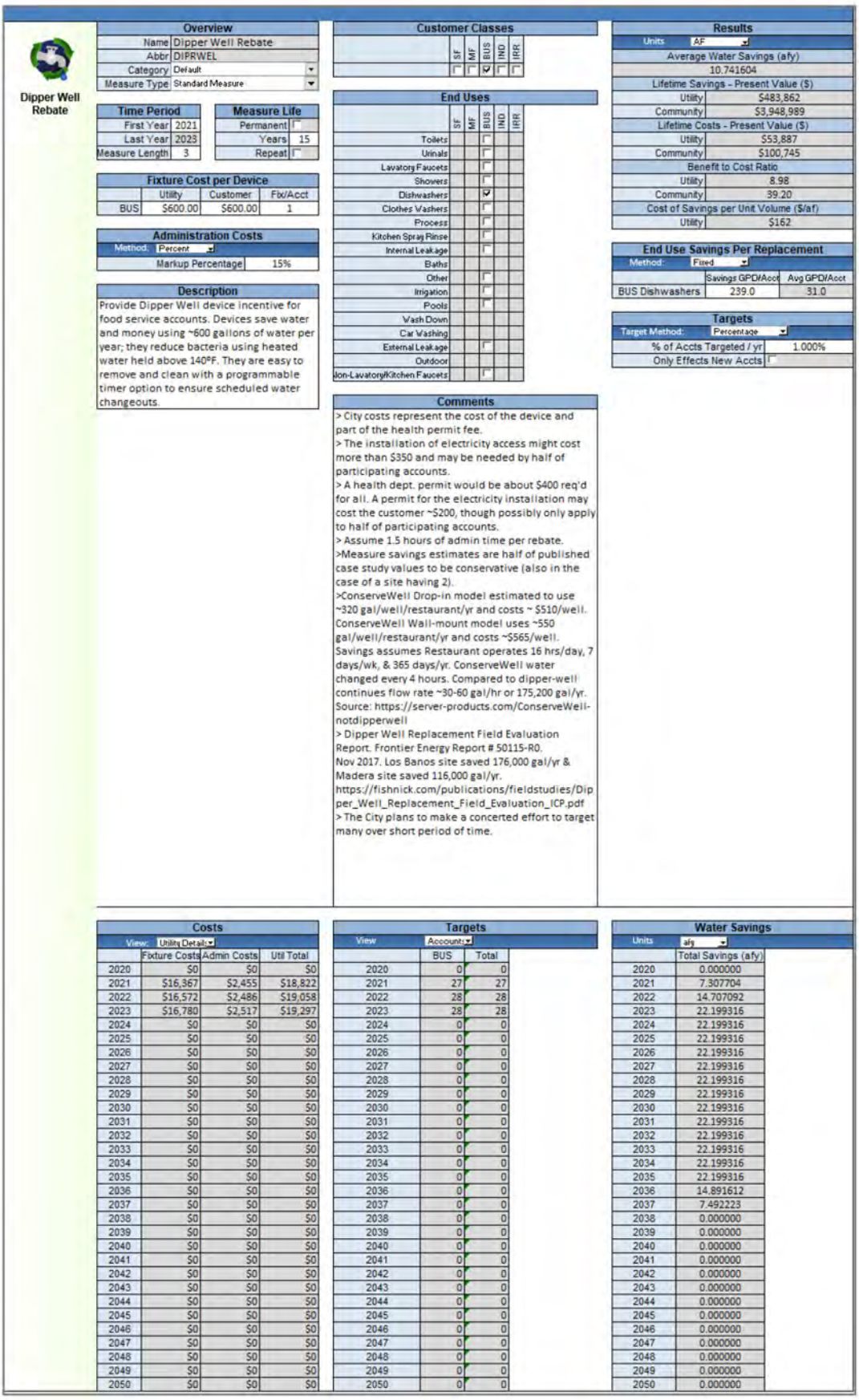
View: Accounts

	SF	MF	BUS	IND	IRR	Total
2020	16,925	7,099	2,694	54	855	27,627
2021	16,950	7,151	2,728	55	866	27,749
2022	16,974	7,204	2,762	55	877	27,872
2023	16,999	7,256	2,797	56	888	27,996
2024	17,024	7,309	2,832	57	899	28,119
2025	17,048	7,361	2,867	57	910	28,244
2026	17,073	7,413	2,903	58	921	28,369
2027	17,098	7,465	2,940	59	933	28,495
2028	17,123	7,517	2,977	60	945	28,621
2029	17,147	7,570	3,014	60	957	28,748
2030	17,172	7,622	3,052	61	969	28,875
2031	17,179	7,674	3,090	62	981	28,986
2032	17,186	7,727	3,129	63	993	29,098
2033	17,194	7,779	3,168	64	1,005	29,210
2034	17,201	7,831	3,208	64	1,019	29,322
2035	17,208	7,884	3,248	65	1,031	29,436
2036	17,216	7,936	3,289	66	1,044	29,550
2037	17,223	7,988	3,330	67	1,057	29,665
2038	17,230	8,041	3,372	68	1,070	29,780
2039	17,238	8,093	3,414	68	1,084	29,896
2040	17,245	8,145	3,457	69	1,097	30,013
2041	17,252	8,197	3,500	70	1,111	30,131
2042	17,259	8,250	3,544	71	1,125	30,249
2043	17,267	8,302	3,589	72	1,139	30,368
2044	17,274	8,354	3,634	73	1,153	30,488
2045	17,281	8,407	3,679	74	1,168	30,609
2046	17,289	8,459	3,726	75	1,182	30,730
2047	17,296	8,511	3,772	76	1,197	30,852
2048	17,303	8,564	3,820	77	1,212	30,975
2049	17,310	8,616	3,867	78	1,227	31,099
2050	17,318	8,668	3,916	78	1,243	31,223

Water Savings

Units: afy

	Total Savings (afy)
2020	21.192393
2021	21.133087
2022	21.078911
2023	21.029556
2024	20.984734
2025	20.944195
2026	20.907663
2027	20.871758
2028	20.836564
2029	20.802159
2030	20.768613
2031	20.727722
2032	20.697394
2033	20.676801
2034	20.665193
2035	20.661894
2036	20.666288
2037	20.677820
2038	20.695986
2039	20.720328
2040	20.750433
2041	20.785925
2042	20.826637
2043	20.872250
2044	20.922472
2045	20.977040
2046	21.035714
2047	21.099277
2048	21.164532
2049	21.234297
2050	21.307411



Dipper Well Rebate

Overview

Name	Dipper Well Rebate
Abbr	DIPRWEL
Category	Default
Measure Type	Standard Measure

Time Period

First Year	2021
Last Year	2023
Measure Length	3

Measure Life

Permanent	☐
Years	15
Repeat	☐

Fixture Cost per Device

	Utility	Customer	Fix/Acct
BUS	$600.00	$600.00	1

Administration Costs

Method: Percent

Markup Percentage	15%

Description

Provide Dipper Well device incentive for food service accounts. Devices save water and money using ~600 gallons of water per year; they reduce bacteria using heated water held above 140°F. They are easy to remove and clean with a programmable timer option to ensure scheduled water changeouts.

Customer Classes

	SF	MF	BUS	IND	IRR
	☐	☐	☑	☐	☐

End Uses

	SF	MF	BUS	IND	IRR
Toilets			☐		
Urinals			☐		
Lavatory Faucets			☐		
Showers			☐		
Dishwashers			☑		
Clothes Washers			☐		
Process			☐		
Kitchen Spray Rinse			☐		
Internal Leakage			☐		
Baths					
Other			☐		
Irrigation			☐		
Pools			☐		
Wash Down					
Car Washing					
External Leakage			☐		
Outdoor					
Non-Lavatory/Kitchen Faucets			☐		

Comments

> City costs represent the cost of the device and part of the health permit fee.
> The installation of electricity access might cost more than $350 and may be needed by half of participating accounts.
> A health dept. permit would be about $400 req'd for all. A permit for the electricity installation may cost the customer ~$200, though possibly only apply to half of participating accounts.
> Assume 1.5 hours of admin time per rebate.
>Measure savings estimates are half of published case study values to be conservative (also in the case of a site having 2).
>ConserveWell Drop-in model estimated to use ~320 gal/well/restaurant/yr and costs ~ $510/well. ConserveWell Wall-mount model uses ~550 gal/well/restaurant/yr and costs ~$565/well. Savings assumes Restaurant operates 16 hrs/day, 7 days/wk, & 365 days/yr. ConserveWell water changed every 4 hours. Compared to dipper-well continues flow rate ~30-60 gal/hr or 175,200 gal/yr. Source: https://server-products.com/ConserveWell-notdipperwell
> Dipper Well Replacement Field Evaluation Report. Frontier Energy Report # 50115-R0. Nov 2017. Los Banos site saved 176,000 gal/yr & Madera site saved 116,000 gal/yr. https://fishnick.com/publications/fieldstudies/Dipper_Well_Replacement_Field_Evaluation_ICP.pdf
> The City plans to make a concerted effort to target many over short period of time.

Results

Units: AF

Average Water Savings (afy)	10.741604
Lifetime Savings - Present Value ($)	
Utility	$483,862
Community	$3,948,989
Lifetime Costs - Present Value ($)	
Utility	$53,887
Community	$100,745
Benefit to Cost Ratio	
Utility	8.98
Community	39.20
Cost of Savings per Unit Volume ($/af)	
Utility	$162

End Use Savings Per Replacement

Method: Fixed

	Savings GPD/Acct	Avg GPD/Acct
BUS Dishwashers	239.0	31.0

Targets

Target Method: Percentage

% of Accts Targeted / yr	1.000%
Only Effects New Accts	☐

Costs

View: Utility Detail

	Fixture Costs	Admin Costs	Util Total
2020	$0	$0	$0
2021	$16,367	$2,455	$18,822
2022	$16,572	$2,486	$19,058
2023	$16,780	$2,517	$19,297
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
2031	$0	$0	$0
2032	$0	$0	$0
2033	$0	$0	$0
2034	$0	$0	$0
2035	$0	$0	$0
2036	$0	$0	$0
2037	$0	$0	$0
2038	$0	$0	$0
2039	$0	$0	$0
2040	$0	$0	$0
2041	$0	$0	$0
2042	$0	$0	$0
2043	$0	$0	$0
2044	$0	$0	$0
2045	$0	$0	$0
2046	$0	$0	$0
2047	$0	$0	$0
2048	$0	$0	$0
2049	$0	$0	$0
2050	$0	$0	$0

Targets

View: Accounts

	BUS	Total
2020	0	0
2021	27	27
2022	28	28
2023	28	28
2024	0	0
2025	0	0
2026	0	0
2027	0	0
2028	0	0
2029	0	0
2030	0	0
2031	0	0
2032	0	0
2033	0	0
2034	0	0
2035	0	0
2036	0	0
2037	0	0
2038	0	0
2039	0	0
2040	0	0
2041	0	0
2042	0	0
2043	0	0
2044	0	0
2045	0	0
2046	0	0
2047	0	0
2048	0	0
2049	0	0
2050	0	0

Water Savings

Units: afy

	Total Savings (afy)
2020	0.000000
2021	7.307704
2022	14.707092
2023	22.199316
2024	22.199316
2025	22.199316
2026	22.199316
2027	22.199316
2028	22.199316
2029	22.199316
2030	22.199316
2031	22.199316
2032	22.199316
2033	22.199316
2034	22.199316
2035	22.199316
2036	14.891612
2037	7.492223
2038	0.000000
2039	0.000000
2040	0.000000
2041	0.000000
2042	0.000000
2043	0.000000
2044	0.000000
2045	0.000000
2046	0.000000
2047	0.000000
2048	0.000000
2049	0.000000
2050	0.000000

APPENDIX F – CONSERVATION ANALYSIS RESULTS

This appendix presents benefit and cost analysis results for individual conservation measure and overall conservation programs. Table F-1 presents how much water the measures will save through 2045, how much they will cost, and the cost of saved water per unit volume *if the measures were to be implemented on a stand-alone basis (i.e., without interaction or overlap from other measures that might address the same end use or uses).* 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.[15] This is why a measure like Public Education may show a distorted cost in comparison to water saved. Most, if not all, measures rely on public awareness. However, it is important to note that water savings are more directly attributable to an "active" measure, like a toilet rebate, than the less "active" public education/awareness measure that informs the community of the active measure.

Since interaction between measures has not been accounted for in Table F-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 measure.

Cost categories are defined as follows:

- Utility Costs – Costs the City will incur, as a water utility, to operate measure, including administrative costs.
- Utility Benefits – The avoided cost of producing water at the identified rate $865/AF. More information about the source of this value can be found in Section 4.3.
- Customer (Community) Costs – Those costs customers will incur to implement a measure in the City's conservation program and maintain its effectiveness over the life of the measure.
- Customer (Community) Benefits – The additional savings, such as energy savings resulting from reduced use of hot water. These savings are additional as customers also would have reduced water bills (since the Utility Costs and Benefits transfer to the customers).
- Community Costs – Includes Utility Costs plus Customer Costs.
- Community Benefits – Includes Utility Benefits plus Customer Benefits.

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

- Present Value (PV) of Utility and Community Costs and Benefits ($) = the present value of the 31-year time stream of annual costs or benefits, discounted to the base year.
- Utility Benefit to Cost Ratio = PV of Utility Costs divided by PV of Utility Benefits over 31 years.
- Community Benefit to Cost Ratio = (PV of Utility Benefits plus PV of customer energy savings) divided by (PV of Utility Costs plus PV of Customer Costs), over 31 years.
- Five Years of Water Utility Costs ($) = sum of annual Utility Costs for 2019-2023. Measures start in the years as specified for each measure shown in Appendix E. Utility costs include administrative costs and staff labor.
- Water Savings in 2030 (AFY) = water saved in acre-feet per year. The year 2030 is provided as requested by the City staff to correspond with the 2020 UWMP.
- Cost of Savings per Unit Volume ($/AF) = PV of Utility Costs over 31 years divided by the 31-year water savings. The analysis period is 2020–2050. This value is compared to the utility's avoided cost of water as one indicator of the cost effectiveness of conservation efforts. Note that this value somewhat minimizes the cost of savings because program costs are discounted to present value, but water benefits are not.

[15] 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 originally, without the first measure in place. Then, the revised use of 90% is reduced by another 10% (10% x 90% = 9%) to result in the use being 81% (90% - 9% = 81%). In this example, the net savings is 19%, not 20%. Using impact factors, the model computes the reduction as follows, 0.9 x 0.9 = 0.81 or 19% water savings.

Table F-1. Estimated Conservation Measure Costs and Savings

Measure	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	Five Years of Water Utility Costs 2020-2025	Water Savings in 2030 (AFY)	Cost of Savings per Unit Volume ($/AF)
Commercial									
CII Water Survey Level 2 and Customized Rebate	$910,720	$3,313,109	$915,904	$2,581,185	0.99	1.28	$193,725	18.8	$1,055
Ultra-High Efficiency Urinal Rebate	$59,814	$59,814	$39,504	$86,908	1.51	0.69	$35,223	1.9	$847
Pre-Rinse Spray Nozzle Giveaway	$153,422	$1,252,137	$38,970	$63,025	3.94	19.87	$41,349	4.4	$307
Hot Water on Demand Pump System Rebate	$112,265	$268,758	$157,905	$820,718	0.71	0.33	$167,458	3.3	$1,734
Dipper Well Rebate	$483,862	$3,948,989	$53,887	$100,745	8.98	39.20	$57,177	22.2	$162
Irrigation									
Rain Barrel Rebate	$11,851	$11,851	$126,503	$200,917	0.09	0.06	$28,867	0.7	$5,826
Large Rainwater Catchment System Rebate	$3,050	$3,050	$36,651	$249,120	0.08	0.01	$38,303	0.3	$8,147
Irrigation and Landscape Rebate	$589,219	$589,219	$993,428	$5,432,730	0.59	0.11	$294,989	44.7	$920
Free Sprinkler Nozzle Program	$277,886	$277,886	$329,386	$455,933	0.84	0.61	$103,145	23.0	$680
Mulch Program	$80,739	$80,739	$287,676	$287,676	0.28	0.28	$66,932	4.6	$2,000
Residential									
Residential Rebates for HECW	$139,707	$366,483	$95,879	$200,665	1.46	1.83	$50,325	5.1	$822

Measure	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	Five Years of Water Utility Costs 2020-2025	Water Savings in 2030 (AFY)	Cost of Savings per Unit Volume ($/AF)
Pressure Reduction Valve Rebate	$102,170	$193,970	$49,161	$132,223	2.08	1.47	$37,818	8.5	$425
Leak Detection Device Rebate	$173,095	$843,877	$310,709	$1,304,976	0.56	0.65	$80,264	6.0	$1,935
Ultra-High Efficiency Toilet Rebate	$538,834	$538,834	$405,818	$762,075	1.33	0.71	$362,950	16.3	$921
Full AMI Implementation - Online Water Use Software and Leak Detection Customer Notification	$3,950,836	$16,562,254	$1,566,069	$5,857,952	2.52	2.83	$320,000	133.4	$327
Community & Education									
Water Conserving Landscape and Irrigation Codes	$1,055,819	$1,055,819	$350,316	$7,979,608	3.01	0.13	$78,568	46.1	$161
School Education	$2,251,464	$5,815,471	$519,717	$519,717	4.33	11.19	$122,582	67.1	$270
General Public Education	$683,674	$1,714,160	$4,127,161	$4,127,161	0.17	0.42	$958,815	20.8	$6,372
Water Checkup	$7,624,681	$30,192,376	$6,021,902	$7,705,244	1.27	3.92	$1,384,132	239.4	$884
Irrigation Evaluations	$1,589,488	$1,589,488	$1,918,184	$4,332,779	0.83	0.37	$443,824	98.1	$646
Toilet Flapper Leak Alert Giveaway	$16,670	$104,525	$43,163	$60,428	0.39	1.73	$44,457	0.0	$4,528

Additional information about the water reduction methodology, perspectives on benefits and costs, and assumptions about present value parameters and measure costs/savings can be found earlier in this Plan in Appendix D.

The following table shows each conservation program's present value of water savings and utility costs, as well as cost of water saved. See Appendix D for a more detailed explanation of present value.

Table F-2. Comparison of Program Estimated Costs and Water Savings

Conservation Program	Water Utility Present Value of Water Savings	Water Utility Present Value of Utility Costs	Water Utility Cost of Water Saved ($/AF)
Program A with Plumbing Code	$14,597,000	$15,230,000	$2,870
Program B with Plumbing Code	$19,528,000	$18,024,000	$2,530
Program C with Plumbing Code	$19,664,000	$18,388,000	$2,570

Costs presented in the table above are directly attributable to the City's conservation department only. Present value costs and savings are rounded to nearest $1,000.

Table F-3 lists participation levels for the City's Active Water Conservation Programs over the past five fiscal years. Elements of these programs have been discussed in greater detail in Section 2.3.

Table F-3. City of Santa Barbara's Active Water Conservation Programs

Program	Description	Participation Numbers[1]
Water Check-up	City staff evaluates indoor water fixtures, such as toilets, water heaters, faucets and provides efficiency recommendations	7,192
6th Grade LivingWise Program	Includes literature and water saving devices	1,529
Water e-Sources	Water Resources Division newsletter - people who opened	90,097
Bill Insert Articles	Delivered 12 times a year to City water customers in paper form and electronically	120,000
101 Classes	Classes provide a great overview of the concepts, design, and best practices for Landscape Site Assessment, Rainwater Harvesting, Graywater, and Landscape Maintenance.	451
Water Check-Ups That Included Irrigation Evaluations	City staff evaluates irrigation controller schedule, provides efficiency recommendations	3,676
Landscape Design Standards Review	City staff performs plan checks for land development projects that include new/revised landscaping; ensure that the City's Landscape Design Standards are met	434
Free Rain Sensor Program	For customers that have compatible irrigation controllers, City staff provides a free wired rain sensor	170
Mulch Program	City water customers can get a up to two free dump truck of mulch delivered a year	1,837
Clothes Washer Rebate	$150 rebate for replacing high-water using clothes washers with eligible high efficiency washer models.	229
Irrigation and Landscape Rebate[2]	Smart Landscape Rebate Program (SLRP) rebates up to $1,000 per residential meter or $2,000 per multifamily or commercial meter to replace lawn with low water using plants and/or install efficient irrigation	1,255
Other Landscape Workshops	Drip irrigation, sheet mulching, hands on workshops	3,795
Green Gardener Program	Educates local gardeners in resource efficient landscape management (with RWEP)	309
Education Videos[2]	Videos on how to read your meter, checking for leaks, water supply etc. YouTube hits	14,612
Landscape Education Videos[2]	Videos on setting up irrigation timers, adjusting sprinklers, plant selection, etc. YouTube hits	46,567
Landscape Education Videos – Spanish[3]	Videos on setting up irrigation timers, adjusting sprinklers, plant selection, etc. YouTube hits	266
Media Campaigns – Funds Spent	Messages tailored to the season and run year-round	1,145,000
Media Campaigns – # of Ads[4]	Messages tailored to the season and run year-round	95,660

[1] *Participation numbers are from FY 2015 to FY 2019.*

[2] As of 2017, Water Wise landscaping rebates have resulted in 740,000 sq. ft. of lawn replaced, which is equal to 13 football fields.

[3] *YouTube hits based on year the video was posted not when video was viewed.*

[4] *In 2017, the City stopped tracking by impressions and number of days on television.*

City of Santa Barbara
Fiscal Year 2019 Performance Measure Results

Reporting Period: From 7/1/2018 to 6/30/2019

Department:	Public Works
Division:	Public Works-Water Resources
Program Name and Number:	Water Supply Management (4611) (4612) (4674)
Program Owner:	Kelley Dyer, Madeline Wood
Program Mission:	Provide an adequate supply of water by implementing the Long-Term Water Supply Program, which includes a cost-effective water conservation element and a diverse portfolio of supplies.

5/6, 83% Objectives Achieved

Program Activities:

1. Implement the Long-Term Water Supply Program.
2. Advise on optimal use of the City's diverse sources of water supplies.
3. Provide information on the City's water supplies and water conservation efforts via the City's web site.
4. Manage a cost-effective customer-response based water conservation program that meets federal and state requirements
5. Maintain and protect surface water supplies from the Santa Ynez River.
6. Support member agency activities of the Cachuma Operation and Maintenance Board (COMB), the Cachuma Conservation Release Board (CCRB), and the Central Coast Water Authority (CCWA). Keep Water Commission and City Council liaison briefed on activities of COMB, CCRB, and CCWA.
7. Sustainably manage local groundwater basins for water supply purposes, including ongoing monitoring of water levels and water quality.
8. Evaluate opportunities to increase recycled water use, including non-potable reuse and potable reuse.
9. Manage monthly records of the amount of water produced from each source and the City's surface water diversions in compliance with State requirements, and prepare monthly reports in accordance with the Upper Santa Ynez River Operations Agreement.
10. Update the variable operating cost of each water source for supply planning purposes.
11. Support water financial planning and implement water rates and capacity charges.
12. Provide development review for conformance with individual metering and Landscape Design Standards for Water Conservation requirements.
13. Implement recommendations of multi-year Water Conservation Marketing Plan.

✓ Status	Project Objectives
☑ Complete	1. Present the annual Water Supply Management Report for the previous year to Council for adoption by January 31, 2019.
Comments: Mid-Yr:	The annual Water Supply Management Report was presented to Water Commission on December 20, 2018 and is scheduled for Council on January 29, 2019.
Yr-End:	The annual Water Supply Management Report was adopted by Council on January 29, 2019.
☑ Complete	2. Work with the United States Geological Survey to complete modeling study of the City's groundwater basins.
Comments: Mid-Yr:	The modeling study is complete and the final USGS report was officially released on July 10, 2018.
Yr-End:	

☐ Not Reportable 3. Participate in a Direct Potable Reuse Coalition led by the National Water Research Institute to develop a white paper based on findings of the City's Potable Reuse Feasibility Study.

Comments: Mid-Yr: This effort is currently underway and staff continues to track the State's progress in developing regulations for direct potable reuse (DPR). In April 2018, the State released a proposed framework for regulating DPR, which included a timeline for completing necessary research. The research is expected to be complete by 2021/2022 with draft regulations for DPR released by 2023.

Yr-End: The NRWI has prepared a draft "Guide for Decision-Makers", which is a high-level document that outlines a 12-step process for implementing a potable reuse project. The DPR Coalition will be reviewing the document at a July 12th workshop.

☐ Not Reportable 4. Participate in Bureau of Reclamation technical and negotiation sessions for a new Cachuma Project Master Water Service Contract and support associated environmental review.

Comments: Mid-Yr: Reclamation has not scheduled any additional meetings since August 2017, and staff are still awaiting the release a draft contract for negotiation.

Yr-End: Reclamation has not scheduled any additional meetings since August 2017, and staff are still awaiting the release a draft contract for negotiation.

☐ In-Process 5. Update the Decision Support System Water Conservation Model (DSS Model) and create a new Water Conservation Plan based on the avoided cost of water by June 30, 2019.

Comments: Mid-Yr: The model has been updated with plumbing and building codes, demand projections, population, and jobs. Next to be updated is the avoided cost of water and the conservation measures.

Yr-End: A preliminary model with projections through 2050 was completed in June, further refinement to the conservation measures is needed before finalizing.

Status	Measurable Objectives	Metric
Ahead of Target 76.9% of Target	1. Meet City's Urban Water Management Plan gallons per capita per day (GPCD) target annually.	Gallons Per Capita Per Day

		FY2019						
✓	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
☑	Gallons	117	90	91	91	90	89	90
		Previous FY2018						

Comments: Mid-Yr: The 12 month running average citywide GPCD as of 12/31/18 is 91.

Yr-End: The 12 month running average citywide GPCD as of 6/30/19 is 89.

Status	Measurable Objectives	Metric
Ahead of Target 118.3% of Target	2. Offer water education to Santa Barbara youth through in-class presentations, assemblies, field trips, and events.	Number of youth reached

		FY2019						
✓	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
☑		1,300	0	238	238	1,047	253	1,538
		Previous FY2018						

Comments: Mid-Yr: Aqua Camp summer camp is scheduling our presentations every other year due to repeat campers so we had 0 presentations in Q1.

Yr-End:

Status	Measurable Objectives	Metric
Ahead of Target 137.3% of Target	3. Offer water conservation classes and workshops for homeowners and landscape professionals.	Number of participants

		FY2019						
✓	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
☑		300	59	133	192	60	160	412
		Previous FY2018						

Comments: Mid-Yr: Q1: 59 professionals, 0 homeowners
Q2: 51 professionals, 82 homeowners
Yr-End: Q3: 19 professionals, 41 homeowners
Q4: 15 professionals, 145 homeowners

			FY2019						
Status	Other Program Measures	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
Below Projections 50.% of Target	1. Smart Landscape Rebates pre-inspections completed		200	29	28	57	25	18	100
			Previous FY2018						
			300	*46*	*30*	*76*	*24*	*39*	*139*

			FY2019						
Status	Other Program Measures	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
Below Projections 72.7% of Target	2. Plans reviewed for conformance with Landscape Design Standards for Water Conservation		150	32	33	65	23	21	109
			Previous FY2018						
			100	*38*	*28*	*66*	*48*	*44*	*158*

			FY2019						
Status	Other Program Measures	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
Ahead of Target 190.% of Target	3. Plans reviewed for conformance with individual water metering requirements		50	30	28	58	18	19	95
			Previous FY2018						

			FY2019						
Status	Other Program Measures	UM	Target	Qtr1 Actual	Qtr2 Actual	Mid-Year Actual	Qtr3 Actual	Qtr4 Actual	Year-to-Date
Below Projections 87.6% of Target	4. Free Water Checkup appointments conducted		1,400	379	357	736	251	240	1,227
			Previous FY2018						

Comments:
2. Mid-Yr: Q1: 32 Initial Reviews, 16 1st Resubmittal, 16 2nd Resub, 18 3rd Resub.
Q2: 33 Initial Reviews, 21 1st Resubmittal, 12 2nd Resub, 13 3rd + Resub.
Yr-End: Q3: 23 Initial Reviews, 23 1st Resubmittal, 14 2nd Resub, 4 3rd + Resub.
Q4: 21 Initial Reviews, 18 1st Resubmittal, 6 2nd Resub, 1 3rd + Resub.

4. Yr-End: We have seen a reduction in Water Checkup requests due to the long winter and marine layer; most irrigation systems were off for Q3 and much of Q4.

APPENDIX H – REGIONAL WATER EFFICIENCY PROGRAM (RWEP) ANNUAL REPORT FY2019-20

REGIONAL WATER EFFICIENCY PROGRAM (RWEP)
for
SANTA BARBARA COUNTY

Annual Report for FY2019-2020

Covering July 1, 2019 - June 30, 2020

Let's Save Together
waterWise
IN SANTA BARBARA COUNTY

Prepared by the

Santa Barbara County Water Agency

July 2020

Table of Contents

Regional Water Efficiency Program Overview

The Regional Water Efficiency Program (RWEP) of Santa Barbara County was established by the Santa Barbara County Water Agency in December 1990 in partnership with local water purveyors. RWEP promotes the efficient use of urban and agricultural water supplies countywide, and provides information and assistance to the eighteen local water purveyors within the county, as listed on page 4. Through the RWEP, the Santa Barbara County Water Agency coordinates a collaborative water conservation partnership among purveyors, co-funds projects and programs, acts as a clearinghouse for information on water use efficiency, manages specific projects and programs, and monitors local, state and national legislation related to efficient water use.

This annual report provides information on accomplishments of the RWEP as coordinated by the County. This report does not capture all water conservation activities or accomplishments of each individual water purveyor across the County.

Some local water purveyors, along with the County Water Agency, are required to implement certain Best Management Practices (BMPs) identified by the U.S. Bureau of Reclamation (USBR). This report identifies which RWEP accomplishments relate to specific BMPs that satisfy the USBR's requirement for the County Water Agency, as USBR master contractor for the Cachuma Project, to have a **regional** water conservation plan as a supplement to individual water purveyors' water conservation and supply plans.

For information on water conservation in Santa Barbara County, please visit the RWEP's website at www.WaterWiseSB.org.

Water Purveyors in Santa Barbara County

Below is the list of the 18 water purveyors in Santa Barbara County:

Buellton, City of
Carpinteria Valley Water District
Casmalia Community Services District
Cuyama Community Services District
Goleta Water District
Golden State Water Company, Orcutt
Guadalupe, City of
La Cumbre Mutual Water Company
Lompoc, City of
Los Alamos Community Services District
Mission Hills Community Services District
Montecito Water District
Santa Barbara, City of
Santa Maria, City of
Santa Ynez River Conservation District, I.D. #1
Solvang, City of
Vandenberg Airforce Base
Vandenberg Village Community Services District

Public Information Programs

Supporting USBR's Public Information Program BMP #2.1

Continued to promote the new WaterWiseSB brand and logo for the Regional Water Efficiency Program

- Seasonal media campaigns featured our brand (WaterWise in Santa Barbara County), our logo (see cover of this report), and our tagline (*Let's Save Together*).
- Included the brand/logo on items such as tote bags and water bottles given to students participating in the High School Video Contest, as well as clip boards and hats given to graduates of the Green Gardener Program, and on all outreach material available to the public.

Informed the Public Through Media Campaigns

- Seasonal Media Campaigns and Ads:
    - Summer 2019 media campaign consisted of:
        - TV: "*It's 4 am, Do You Know What Your Sprinklers are Doing?*"
            - July 2019 – September 2019: 7 Stations; 813 spots.
        - Digital: *"It's 4 am, Do You Know What Your Sprinklers Are Doing?"*
            - July 2019 – September 2019: 15,000 Impressions.
        - Theatre Screens:
            - Segment 1: July 26- August 1, 2019, High School Video Contest 1st, 2nd and 3rd place
            - Segment 2: August 2 - August 8, 2019 and September 6, 2019 – September 19: *"It's 4 am, Do You Know What Your Sprinklers Are Doing?"*
            - August 2019 - September 2019: 132 screens.
    - Fall 2019 media campaign consisted of:
        - TV: "*Fall Baby Plants*"
            - October 2019 – December 2019: 7 Stations; 805 spots.
        - Digital: *"Fall Baby Plants"*
            - October 2019 – November 2019: 292,000 Impressions.
        - Theatre Screens: *"Fall Baby Plants"*
            - November 2019: 66 screens.
    - Winter 2020 media campaign consisted of:
        - TV: "*Sneaking In" & "Sneaking Out"*
            - January 2020 – March 2020: 643 spots
        - Digital: *"Sneaking In"* & *"Sneaking Out"*
            - 100,000 pre-roll impressions
        - Theatre Screens: *"Sneaking In" & "Sneaking Out"*
            - January 2020 – March 2020: 220 screens.
    - Spring/Summer 2020 media campaign consisted of:

- TV: *"Spruce Up Your Sprinklers This Spring"*
  - May 2020 – June 2020: 8 Stations; 505 Spots.
- Theatre Screens: *"Spruce Up Your Sprinklers This Spring"*
  - Since theaters were closed in spring, ads will be aired once theaters open in July 2020 - August 2020.
- Digital: *"Spruce Up Your Sprinklers This Spring"*
  - May 2020 – June 2020: 30,000 pre-roll impressions, 436,951 mobile/desktop impressions.
- Print: "*Spruce Up Your Sprinklers This Spring*"
  - May 2020 – June 2020: 1 news publication; 1 print spot.

- Green Gardener Program
  - 329 Green Gardener radio ads were placed to advertise classes in fall, spring, and summer; as well as to promote the list of certified Green Gardeners on WaterWiseSB.org.
- Media ads were co-funded by most water providers across the County. See list of funding agencies at end of this report.

Informed Public Through Water Conservation Website: www.WaterWiseSB.org

- County staff maintained the website to be current and used as a resource to help promote and expand outreach for member agencies. Continually, staff posted needed changes and updates, countywide calendar events, new information, resources and links.
- The website averaged 1,436 "users" per month. There were a total of 17,236 users in FY2019-20.

Participated in Public Events

- The County WA coordinated and registered on behalf of RWEP members to table at the Landscape Expo sponsored by All-Around Landscape Supply. This event was held at Earl Warren Showgrounds in February 2020. The County WA coordinated the display table with RWEP members, organized a tabling schedule, and brought materials on behalf of members who could not attend.
- The Santa Barbara Earth Day Festival was held virtually this year in April 2020.
- In support of Water Awareness Month in May, SBCWA prepared a Resolution that was passed by the County Board of Supervisors on May 5, 2020.
- Annually, the County WA coordinates a public display in North County at the County's Santa Maria Center and in South County at the County's Admin Building for the month of May. There were no displays this year due to the closure of buildings from COVID-19. The public was directed to access informational materials online.
- Provided educational water conservation brochures and handouts for free.
- Provided materials for members to distribute at local community events year-round.

Water Conservation Outreach Material and Brochures updated

- Distributed over 10,000 brochures, catch cans, and other materials; and to RWEP partners for distribution to their retail customers.
- Development for the new Water Wise Landscape Maintenance Guidebook is underway.

Issued Press Releases

- Periodically issued 4 press releases County-wide for RWEP program announcements:
  - *"Applications Open for the WaterWise High School Video Contest"* (November 25, 2019).
  - *"Water Providers Launch WaterWise Garden Recognition Contest"* (February 5, 2020).
  - *""Your Vote Counts in the County's 21st Annual WaterWise High School Video Contest"* (March 30, 2020).
  - *"Dos Pueblos High School Wins the 21st Annual Santa Barbara County WaterWise High School Video Contest"* (April 22, 2020).

Landscape Water Use Programs

Supporting USBR's Landscape BMP #5;
and Residential BMP #3.2 for Landscape Water Survey.

Garden Recognition Contest

- This program was reinstituted in FY19-20.
- Four agencies participated in the program this year, including the Carpinteria Valley Water District, City of Santa Barbara, Montecito Water District, and the Vandenberg Village Community Services District.
- We received a total of 12 applications. One winner from each district was selected. One County winner was selected out of the district winners. The winners for the contest this year were:
  - Carpinteria Valley Water District - Bob and Pat Wingate
  - Montecito Water District- Laura and Geof Wyatt
  - Vandenberg Village Community Services District- Linda Zivich
  - City of Santa Barbara - Stephanie Poole, who was also the overall County winner
- Winners were presented with an engraved Garden Award boulder to showcase in their garden.
- A Press Release to announce the winners will be issued in summer 2020.

Water Wise Landscape Maintenance Guidebook

- The County WA in coordination with RWEP members established a contract with CalWEP as the Project Manager of the Guidebook.
- The County WA serves on the Project Advisory Committee on behalf of the regional partners along with members from other funding agencies. Staff attended meetings, reported updates and collated all feedback from participating members, and will continue to represent RWEP until the final product is complete and published.
- The feedback was provided from participating members on the Table of Contents and Regional Page to CalWEP.
- The development and printing of the Guidebook was funded by previous FY Landscape Education program funds already paid by members.

Green Gardener Program

- Students received training and certification from Santa Barbara City College (SBCC) or Allan Hancock College (AHC) through the 15-week course.
- AHC in Santa Maria secured a new instructor in fall 2019.
- At SBCC, there was a Basic class held during fall, spring (virtual), and summer I and II (virtual) semesters. Vocation ESL class was offered in fall 2019 as a supplemental class for students to improve their English communication skills. The Advanced class was held in spring 2020. In total, there were 65 graduates (24 were advanced students)..
- At AHC, there were no classes in fall 2019 or spring 2020. The online classes during spring and summer 2020 semesters at SBCC were advertised in North and Mid-County for students to participate virtually.
- Green Gardener Public List was updated and published in July and December 2019, and June 2020 on www.GreenGardener.org.
- In coordination with both class instructors, the class curriculum, PowerPoint slides, and Student Manual were updated with current information and resources.
- A new Green Gardener logo was developed, and one was created to honor this year's 20th Anniversary of the program.
- Four class flyers were created and posted on the website.
- Principal co-funders were: SBCC, County WA, City of Santa Barbara, Goleta Water District, Montecito WD, Carpinteria Valley WD, La Cumbre Mutual WC, Buellton, Solvang, Santa Ynez River WCD, ID#1, City of Santa Maria and some non-RWEP member sponsors including All Around Landscape Supply; Santa Barbara County Resource Recovery & Waste Management Division; Santa Barbara County APCD; Engel & Grey; and City of Santa Barbara Creeks Division.

Produced and Aired additional episodes for *Garden Wise TV Show*

- 2 new episodes aired during FY19-20.
    - Episode 19: *"Microbial Life"*
    - Episode 20: *"Do it Yourself"*

- Santa Barbara City TV filmed all shows; Aired on County GATV20, SB City TV18, Comcast 23 and Santa Maria public access TV. Also available for viewing online at WaterWiseSB's YouTube page.
- Co-funded by County, City of Santa Barbara, Goleta WD, and other water providers.

Funded website for "*Water Wise Gardening for Santa Barbara County*"

- Website received 73,309 page views with 8,835 visits and users. This was a 43% increase from last year's page views of 51,036.

Updated Weekly Watering % Adjust

- County WA staff updated website weekly using data from five out of nine California Irrigation Management Information System (CIMIS) stations across SB County. Due to drought conditions, a number of CIMIS stations have stopped collecting data over the last few years.
- The Watering % Adjust was updated to be off after significant rain events.

Funded Large Landscape Evaluations across Santa Barbara County

- County funded Cachuma Resource Conservation District's Mobile Irrigation Lab.
- CRCD's expert staff conducted irrigation system evaluations through site visits and testing of turf and crop irrigation systems County-wide.
    - 13 irrigation evaluations covering 145 irrigated acres in Santa Maria, Lompoc and Goleta
    - Range of DU values: 0.13-0.94 (mean value = 0.77)
- CRCD staff gave tutorials on water conservation strategies at one-on-one field visits:
    - Conducted field visits with 59 individual growers in Santa Maria
    - Emphasis on nitrate leaching and importance of irrigation management
- CRCD staff assisted growers in applying for SWEEP funding through CDFA:
    - 2 application workshops (Santa Ynez and Santa Maria)
    - One workshop conducted in Spanish
    - 9 attendees and at least 2 applications for funding submitted

Youth Education Programs

Supporting USBR's School Education Programs BMP #2.2

School Assembly Presentations on Water Conservation

- The County WA partnered with local water purveyors to co-fund water education assembly-style presentations at elementary schools.
- Extended contract (with "Shows That Teach") for engaging musical-comedy-educational show about the value of water & water conservation, while developing a new Fall Proposal to offer digital/video performances next fall.

- There were 11 performances that reached 1762 students at 8 schools in Buellton, Carpinteria, Goleta, and Santa Barbara. There were 5 performances scheduled that were cancelled due to COVID-19.

High Schools Competed in the 2020 WaterWise High School Video Contest

- The County WA updated the contest flyer, sent letters and flyers to schools, and digitized student contest materials that were posted on the website.
- The contest received 10 video submissions by 28 students from 5 different schools countywide for potential use as 30-second Public Service Announcements on water conservation.
- The County WA secured ~$3,000 of in-kind donations from 7 sponsors for student prizes, including 2 new sponsors. This was the first year the contest had a sponsor for a new Spanish award category. The featured prizes donated by the private sector companies were provided to the student winning teams:
    - First place, "*Drought Resistant Lawns are the Future"* by Dos Pueblos High School received $1000. Students won a $500 prize provided by Carollo Engineers.
    - Second Place, "*Mulch Master"* by Pioneer Valley High School received $500. Students received a $350 prize provided by Geosyntec consultants.
    - Third Place, *"Doctor Drought"* by Santa Ynez High School received $300. Students received a $150 prize provided by Ewing Irrigation.
    - North County Honorable Mention, *"Life without Lawns"* by Santa Ynez High School received $100. Students received carwash vouchers provided by Splash n' Dash Recycled Carwash.
    - South County Honorable Mention, *"Alternative Ways"* by Dos Pueblos High School received $100. Students won tickets to the 2021 Santa Barbara International Film Festival.
    - People's Choice Award: *"Drought Resistant Lawns are the Future"* by Dos Pueblos High School received a record high of 364 likes on the WaterWiseSB YouTube channel.
    - Teachers who participated in the Teacher Questionnaire received movie tickets provided by NCM Theaters.
- Students and schools received awarded trophies and certificates. Schools included Bishop Garcia Diego High School, Dos Pueblos High School, Orcutt Academy, Pioneer Valley High School, and Santa Ynez Valley Union High School.
- The Awards Ceremony at Parks Plaza Theatre in Buellton was planned for May 2020. Due to COVID-19, the event was cancelled. Students were mailed their prizes and certificates.
- The student video submissions were posted on YouTube, Facebook, and www.WaterWiseSB.org.
- The Teacher Questionnaire was updated and sent out to this year's and previous participating teachers.
- 1st, 2nd and 3rd place winning videos used in spring and summer media campaigns.

- Co-funded by all RWEP members across the County.

Made awards as part of Santa Barbara County Science Fair

- The Science Fair is open to all high school and junior high students county-wide. This event was cancelled due to COVID-19.

Commercial and Institutional Programs

Supporting USBR's Commercial, Industrial, and Institutional BMP #4

Participated in County's Green Business Program

- The County WA served as a representative on program's Steering Committee and attended 6 bi-monthly meetings.
- The County WA helped coordinate a virtual Green Business Academy, four Green Business Alliance meetings/mixers, and virtual water audits. Staff also helped coordinate the program's Annual Luncheon in March 2020. The County WA was recognized for the recertification of the County Public Works' Naomi Schwartz Building in Santa Barbara.
- There were 10 new Green Business certifications, 2 reached Innovator level, and 14 Green Business re- certifications, 2 reached Innovator level.
- The County WA provided high-efficiency faucet aerators and educational materials for water audits, meetings, and mixers.
- The County WA achieved recertification of the County Public Works Department's Naomi Schwartz Building in Santa Barbara. WA staff are continue to work on the recertification of the County Public Works Department's Santa Maria Service Center in Santa Maria.

Information on Utility Operations

Supporting USBR's Utility Operations BMP #1.3 for metering rates; and BMP #1.4 for retail conservation pricing.

Reported on Local Water Rates

- The County WA compiled water rate information from 17 local water purveyors across Santa Barbara County and organized a 2020 Water Rates Summary.
- The report was shared and posted online under "About Us" at www.WaterWiseSB.org.
- All local purveyors cooperated; staffed by County WA.

Compiled Water Production Data

- The County WA compiled local water purveyors' annual water production data for CY2019, and organized a 2019 Water Use Summary.

- The summary table was shared and posted online under "About Us" at www.WaterWiseSB.org.
- All local purveyors cooperated; staffed by County WA.

Coordination of Regional Water Efficiency Program

Supporting USBR's Utility Operations BMP #1.1.1 for a Conservation Coordinator

Coordinated Monthly RWEP Meetings

- For program coordination, information sharing, vetting ideas, etc.
- The County WA scheduled and facilitated all meetings, including preparing agenda drafts for feedback, meeting materials, and circulated meeting notes. The County WA also maintained a video conferencing contract to hold virtual meetings.
- The County WA coordinated and conducted 12 meetings.

Coordinated Quarterly RWEP Sub-Committee Meetings: Website & Education

- For program coordination, planning, and discussion of education and website specific programs. Vet ideas through sub-committee members to present to monthly RWEP meetings.
- The County WA coordinated and conducted 8 meetings total for the sub-committees.
- Coordinated the HSVC group judging session in March 2020.

Coordinated Joint-Meetings with Outside Water Conservation Agencies

- The County WA coordinates with staff from water purveyors in Ventura County to host a meeting every December. This joint-meeting was combined with the CalWEP Plenary held in Santa Barbara County in December 2019.
- The County WA coordinated with staff from water purveyors in San Luis Obispo County to host a joint-meeting in February 2020.
- Meetings useful for program coordination, information sharing, networking, vetting ideas, etc.

Coordinated and Hosted California Water Efficiency Partnership (CalWEP) Plenary in Santa Barbara

- The County WA coordinated with CalWEP and members to host a Plenary in December 2019 in Santa Barbara County. Coordination included assisting with the agenda, speakers, Plenary events, procuring venues, etc. There were over 100 attendees throughout the State at the event.
- The County WA served as the Host Presenter at the event.

Coordinated and Hosted Division of Water Resources (DWR) Water Education Committee Meeting in Santa Barbara

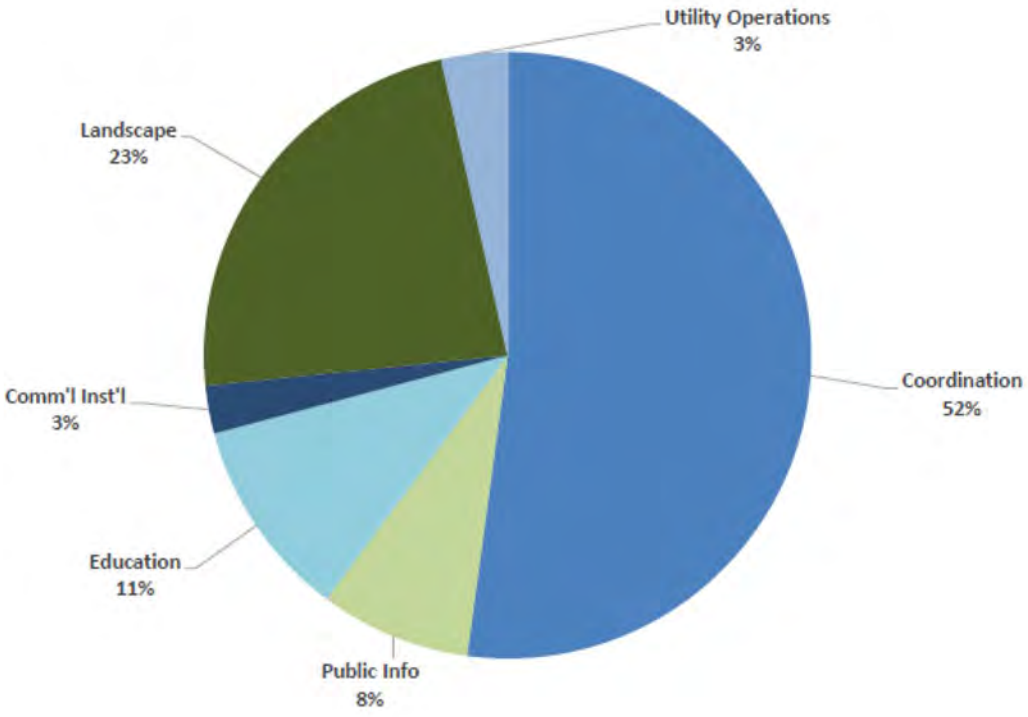
- The County WA coordinated with City of Santa Barbara and Ventura staff to host a DWR Water Education Committee meeting in Santa Barbara County in February 2020. Coordination included organizing the meeting agenda, presenters, event tour and mixer, procuring meeting venue, etc. Multiple water education staff throughout the State attended.

Regional Programs and Projects Co-Funded by Local Water Providers FY2019-2020*					
	Website	Media Campaigns	Youth Education	Garden Wise TV Show	Green Gardener Program
City of Buellton	Website	Ads	HS Video	TV	Green
Carpinteria Valley Water District	Website	Ads	HS Video	TV	Green
Cuyama CSD	Website	Ads	HS Video		
Golden State Water Company, Orcutt	*Not participating				
Goleta WD	Website	Ads	HS Video	TV	Green
City of Guadalupe	*Not participating				
La Cumbre Mutual Water Company	Website	Ads	H S Video	TV	Green
City of Lompoc	Website	Ads	H S Video	TV	
Los Alamos CSD	Website	Ads	H S Video		
Mission Hills CSD	*Not participating				
Montecito WD	Website	Ads	HS Video	TV	Green
City of Santa Barbara	Website	Ads	HS Video	TV	Green
Santa Barbara County Water Agency	Website	Ads	HS Video	TV	Green
City of Santa Maria	Website	Ads	HS Video	TV	Green
Santa Ynez River WCD, ID#1	Website	Ads	HS Video	TV	Green
City of Solvang	Website	Ads	HS Video	TV	Green
Vandenberg Village CSD	Website	Ads	HS Video	TV	

*Many water purveyors have water conservation programs separate from regional projects listed here.

The Allocation of County Water Agency Staff Time for the RWEP in FY2019-2020

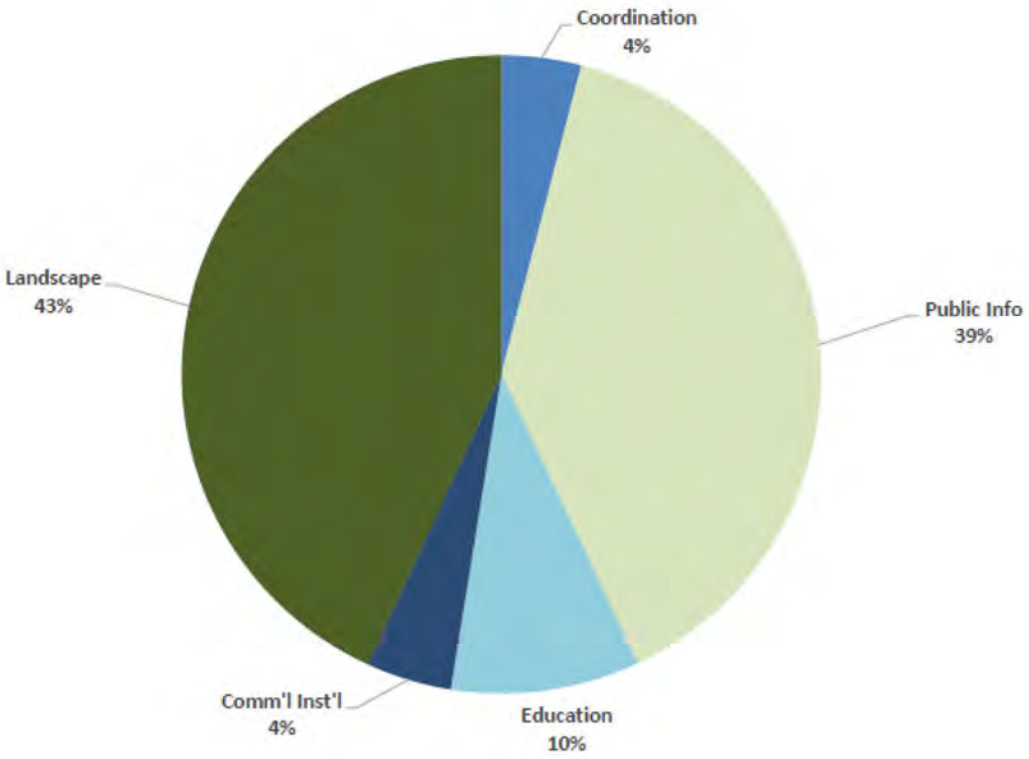
Listed below is the total labor hours worked on RWEP programs and/or projects categories by County Water Agency staff.



15

The Allocation of RWEP Funds in FY2019-2020

Listed below is the percentage of total funds spent on RWEP programs and projects by category. The total includes County Water Agency funds and the contributions from RWEP members for FY2019-2020. The total excludes funds for staff time and the CRCD Mobile Irrigation Lab that were funded by the County Water Agency.



16

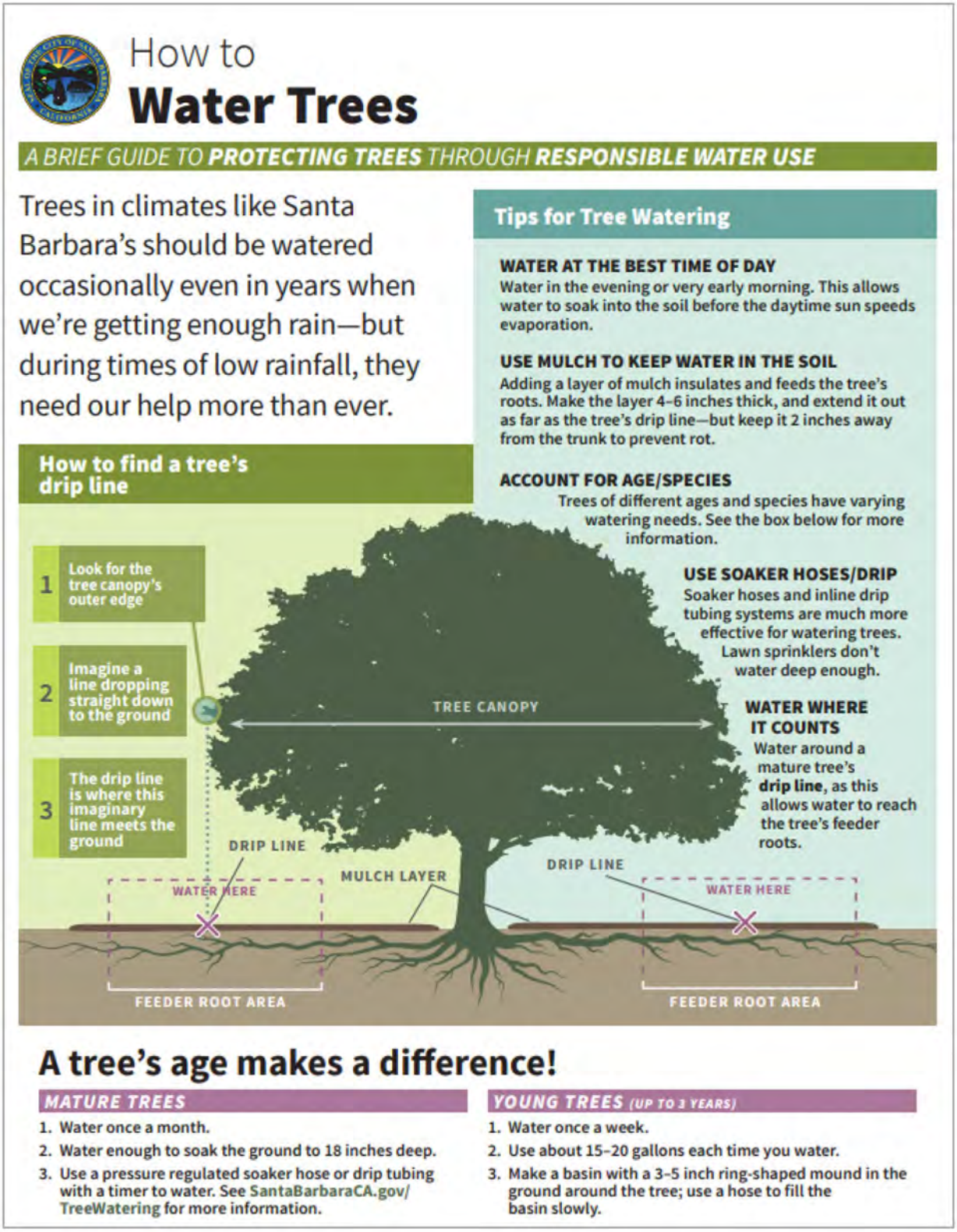
APPENDIX I – EXAMPLES OF LOCAL AND REGIONAL OUTREACH INITIATIVES

Social Media Examples

"Let the rain do the work!" Landscape Campaign

Online Example

City of Santa Barbara's Water Wise Landscaping "Tree Watering" Web Page

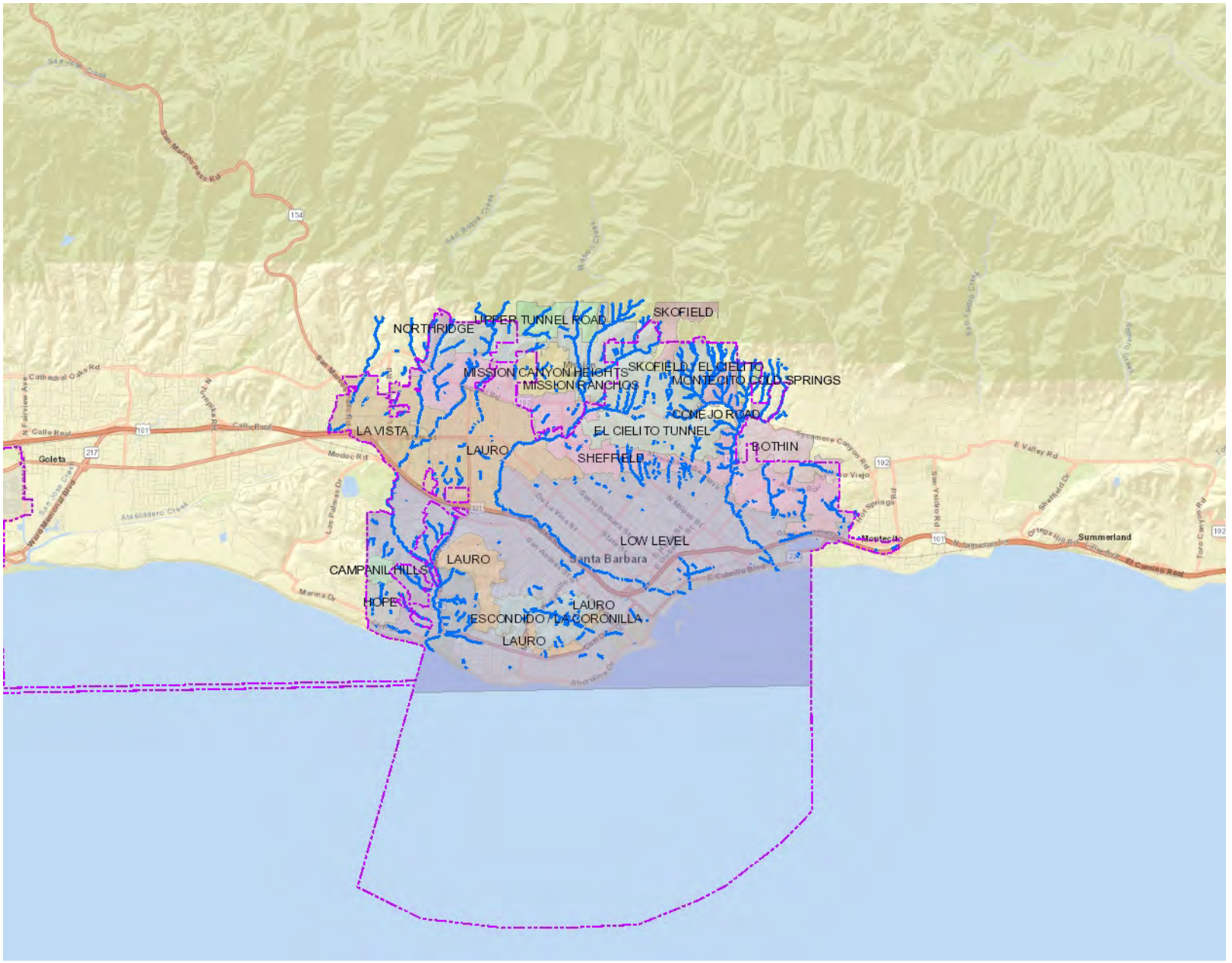


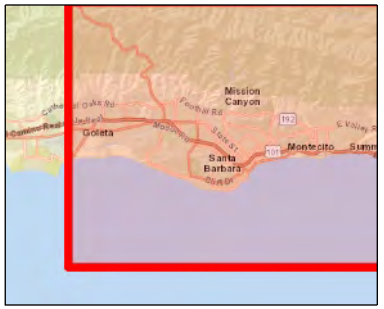
Source: City of Santa Barbara Tree Watering web page.
https://www.santabarbaraca.gov/gov/depts/pw/resources/conservation/landscaping/treewatering.asp?utm_source=PublicWork&utm_medium=TreeWatering&utm_content=QuickLinks

Print Ad Examples

Attachment 5: Map of Designated Wetlands & Surface Waters Under CWA

Hydrography Map - Creeks w/ Pressure Zone Overlay





Legend

- City Limits
- Creeks

Pressure Zones

- BOTHIN
- CAMPANIL HILLS
- CONEJO ROAD
- EL CIELITO TUNNEL
- ESCONDIDO / LA CORONILLA
- GIBRALTOR
- HOPE
- LA VISTA
- LAURO
- LOW LEVEL
- MIRA MONTE
- MISSION CANYON
- MISSION CANYON HEIGHTS
- MISSION RANCHOS
- MONTECITO COLD SPRINGS
- NORTHRIDGE
- NOT APPLICABLE
- SHEFFIELD
- SKOFIELD
- SKOFIELD / EL CIELITO
- UNKNOWN
- UPPER TUNNEL ROAD

World Street Map

1: 139,625

23,270.762 0 11,635. 23,270. Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere

Reported on 09/19/2019 03:35 PM

MAP DISCLAIMER

This service has been provided to allow a visual display of City information. Every effort has been made to ensure the accuracy of the map and data. The City of Santa Barbara assumes no responsibility arising from the use of this information. THE MAPS AND ASSOCIATED DATA ARE PROVIDED WITHOUT A WARRANTY OF ANY KIND. This map was created using the City of Santa Barbara Mapping Analysis and Printing System application.

Notes

RESOLUTION NO. 20-066

A RESOLUTION OF THE COUNCIL OF THE CITY OF SANTA BARBARA AUTHORIZING THE PUBLIC WORKS DIRECTOR TO SUBMIT AN APPLICATION AND COMMIT THE CITY TO THE FINANCIAL AND LEGAL OBLIGATIONS ASSOCIATED WITH RECEIVING FUNDING UNDER THE FEDERAL BUREAU OF RECLAMATION'S FY-2021 WATERSMART WATER AND ENERGY EFFICIENCY GRANTS PROGRAM.

WHEREAS, the City operates a robust conservation program utilizing industry best management practices to educate and inform customers on water saving opportunities;

WHEREAS, Advanced Metering Infrastructure will further the City's conservation goals by providing customers with data about their water consumption and individual use patterns to help them conserve;

WHEREAS, it is in the best interest of the City to seek grant funding to lessen financial impacts to the City's water customers; and

WHEREAS, within 30 calendar days of the grant application due date, September 17, 2020, the Federal Bureau of Reclamation (Bureau) requires the passage of an official resolution from an applicant's governing body to certify applications for the WaterSMART Water and Energy Efficiency Grants Program.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF SANTA BARBARA AS FOLLOWS:

SECTION 1. The Public Works Director is authorized to submit an application, enter into a grant agreement, and take all actions necessary or convenient to implement a grant under the Fiscal Year 2021 WaterSMART Water and Energy Grants Program for the purposes described in this resolution.

SECTION 2. The Public Works Director is authorized to match the maximum grant award amount of $500,000 from funds budgeted to and in-kind resources of the Water Resources Division.

SECTION 3. The City of Santa Barbara will work in good faith to meet established deadlines for entering into a grant or cooperative agreement.

SECTION 4. The Public Works Director is authorized and directed to prepare the necessary data, conduct investigations, submit said funding application, and take all other actions necessary or convenient to securing an award of grant. The Public Works Director may delegate responsibility and authority granted by this resolution.

RESOLUTION NO. 20-066

STATE OF CALIFORNIA)
)
COUNTY OF SANTA BARBARA) ss.
)
CITY OF SANTA BARBARA)

I HEREBY CERTIFY that the foregoing resolution was adopted by the Council of the City of Santa Barbara at a meeting held on September 15, 2020, by the following roll call vote:

AYES: Councilmembers Eric Friedman, Alejandra Gutierrez, Oscar Gutierrez, Meagan Harmon, Mike Jordan, Kristen W. Sneddon; Mayor Cathy Murillo

NOES: None

ABSENT: None

ABSTENTIONS: None

IN WITNESS WHEREOF, I have hereto set my hand and affixed the official seal of the City of Santa Barbara on September 16, 2020.

Sarah P. Gorman, CMC
City Clerk Services Manager

I HEREBY APPROVE the foregoing resolution on September 16, 2020.

Cathy Murillo
Mayor

RESOLUTION NO. 20-066

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