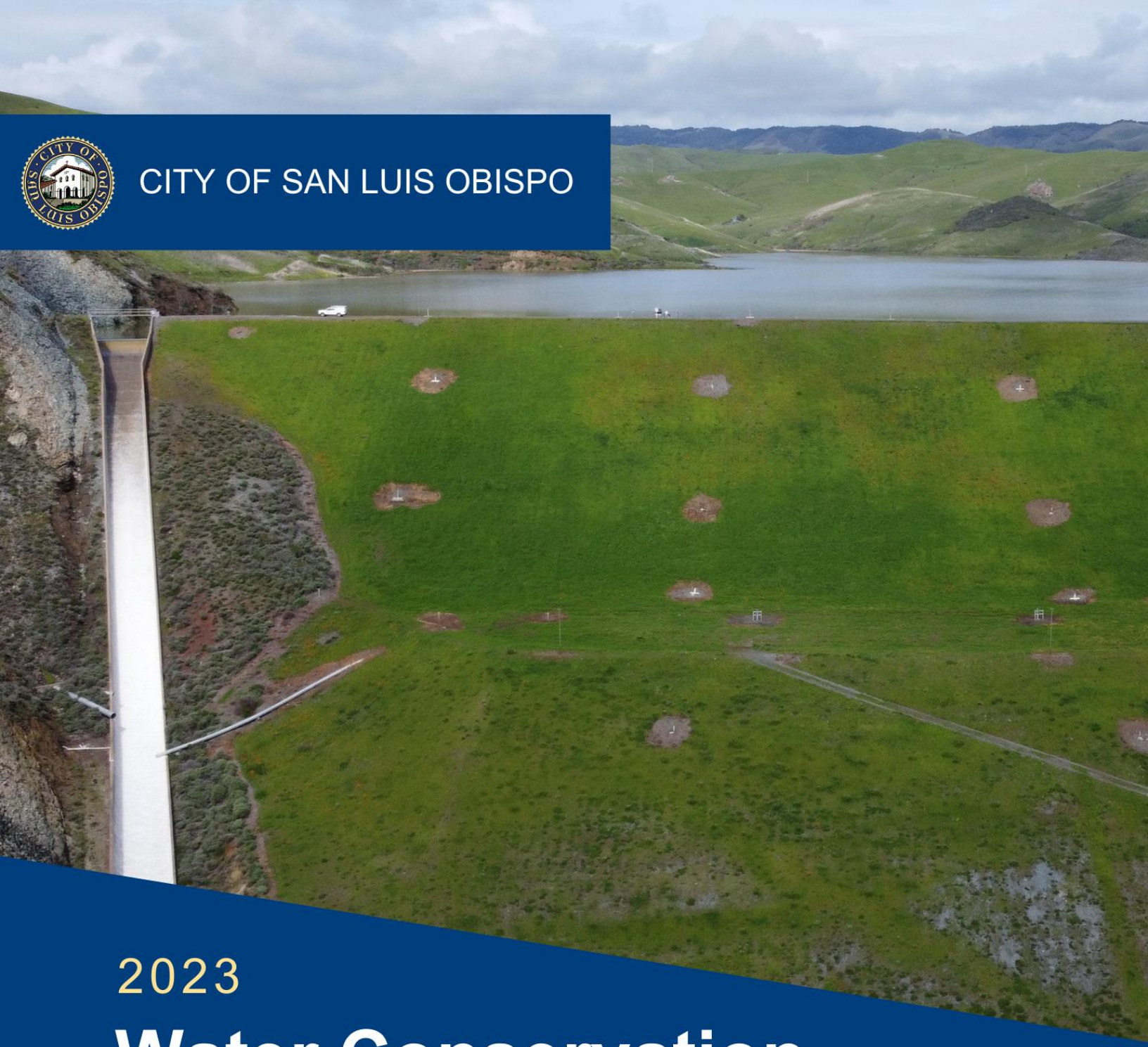

CITY OF SAN LUIS OBISPO

2023

Water Conservation & Efficiency Plan

Water for a Sustainable Future

slocity.org/water

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

AB	Assembly bill
AF	Acre-feet
AFY	Acre-feet per year
AMI	Advanced metering infrastructure
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
CALGreen	California Code of Regulations, Title 24, California Green Building Standards Code
Cal Poly	California Polytechnic State University
CII	Commercial, industrial, and institutional
CO2	Carbon dioxide
CWC	California Water Code
DIM	Dedicated irrigation meter
FY	Fiscal year
GHG	Greenhouse gas
GPCD	Gallons per capita per day
HCF	Hundred cubic feet
kWh	Kilowatt hour
Mgd	Million gallons per day
MFR	Multi-Family Residential
MWELO	Model Water Efficient Landscape Ordinance
PG&E	Pacific Gas and Electric
psi	Pounds per square inch
R-GPCD	Residential gallons per capita per day
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SFR	Single-Family Residential
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
WRRF	Water Resource Reclamation Facility
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant
WWME	Water and Wastewater Management Element

1. INTRODUCTION

Purpose and Scope

The City of San Luis Obispo (City) has developed the Water Conservation and Efficiency Plan to ensure the sustainable management of its water resources while meeting the needs of a growing community and the demands of evolving water-use regulations. The purpose of this plan is to guide the implementation of water conservation measures that maximize water savings using available financial and staffing resources. Water conservation includes activities designed to (1) reduce the demand for, and improve use efficiency of, water use (demand management), (2) reduce losses and waste of water, and (3) improve land management practices, such as soil improvement and low-impact development stormwater retention.

The City is committed to maintaining its long history of water conservation and water supply reliability. As a continuation of this commitment, the Water Conservation and Efficiency Plan includes a detailed assessment of historical and current water conservation efforts, a comprehensive evaluation of long-term water conservation measures, and thoughtful selection of water conservation measures to be incorporated into the City's future water conservation programing. The Water Conservation and Efficiency Plan also aims to estimate water supply and demand changes in response to water use efficiency regulations, implementation of water conservation measures, and population growth. This plan differs from the City's Water shortage Contingency Plan (WSCP)[1] in that it defines actions the City will take to proactively conserve water, while the WSCP defines water conservation actions that will be taken in response to various degrees of drought.

[1] The City's 2020 Water Shortage Contingency Plan can be accessed at: https://www.slocity.org/home/showpublisheddocument/31039/637673766931570000

Objectives

The five primary objectives of this plan are to:

1. Develop cost-effective water conservation measures that maximize opportunities to meet the future water needs of the community.
2. Offset and/or delay the need to construct additional water supplies or upsize treatment and distribution infrastructure.
3. Offset and/or reduce ratepayer costs for the treatment and delivery of safe water and the treatment of wastewater.
4. Meet state and federal water conservation mandates.
5. Foster environmental stewardship through the implementation of responsible and innovative water use practices.

To achieve these objectives, the City will continue to strive to be more water-efficient within its own operations and maintenance practices and encourage customers to be more water efficient through the implementation of various water conservation measures. The Water Conservation and Efficiency Plan will act as a roadmap for the City to meet its water conservation goals, while also ensuring that its water resources are sustainable for future generations.

Plan Development and Public Participation

The City's Water Conservation and Efficiency Plan was developed with valuable input and recommendations to ensure that it reflects the needs of the community. Stakeholders included City staff and members of the community-at-large. The plan will be regularly reviewed and revised to reflect new technology and industry practices, and staff will seek public input during these updates to ensure continued community involvement. Revisions will be made with careful consideration of the benefits and costs associated with the most current water conservation and efficiency industry standards. By continuing to engage with a wide range of stakeholders, the Water Conservation and Efficiency plan will continue to promote the responsible use of the City's water resources for all community members.

Plan Elements

The City's approach to water conservation is tailored to the unique needs and characteristics of the San Luis Obispo community. The Water Conservation and Efficiency Plan includes a comprehensive analysis of the City's water service area, current and historical water supply and demand patterns, and relevant conservation regulations. Next, an evaluation of potential long-term water conservation measures is conducted using the Alliance for Water Efficiency (AWE) Conservation Tracker Tool. With this information, the plan identifies a final water conservation program and sets specific targets for reducing usage in residential and commercial sectors. This section also outlines the measurable objectives the City aims to achieve to meet those targets. Lastly, the Water Conservation and Efficiency Plan describes an implementation plan that the City will use to regularly monitor and evaluate the effectiveness of the water conservation measures that have been implemented. Overall, the Water Conservation and Efficiency Plan acts as an important tool in evaluating the City's approach to water conservation and establishing a more sustainable and resilient water supply for the community.

2. SERVICE AREA AND WATER SYSTEM CHARACTERISTICS

Service Area

The City of San Luis Obispo is located about half-way between Los Angeles and San Francisco, California (Figure 1) and has a total area of 13.2 square miles. Situated in a coastal valley approximately ten miles inland from the Pacific Ocean, the City's Mediterranean climate provides for mild and dry summers and cool winters, with an annual average of about 20 inches of precipitation. Summers are generally warm and sunny, often with morning fog from the Pacific coast. Winters are generally mild, though below freezing lows may be expected during the winter. Temperatures vary widely, with 80° F readings in January and February not uncommon. Because the City receives water from surface water reservoirs located in different watersheds, climate data specific to the areas surrounding the reservoirs are utilized in water management models.

Demographic Forecasts

The City's January 2023 population was 47,788.[2] From 2012 to 2022, the City grew by 235 people which was below the City's General Plan one percent growth maximum[3]. The City's future growth is projected to be in specific plan areas, as well as infill and intensification of existing developed areas, such as the City's' downtown.

[2] The State of California Department of Finance, *Population and Housing Estimates for Cities, Counties, and the State – January 1, 2022 and 2023* can be accessed at: https://dof.ca.gov/forecasting/demographics/estimates-e1/

[3] The City of San Luis Obispo General Plan can be found at: https://www.slocity.org/government/department-directory/community-development/planning-zoning/general-plan

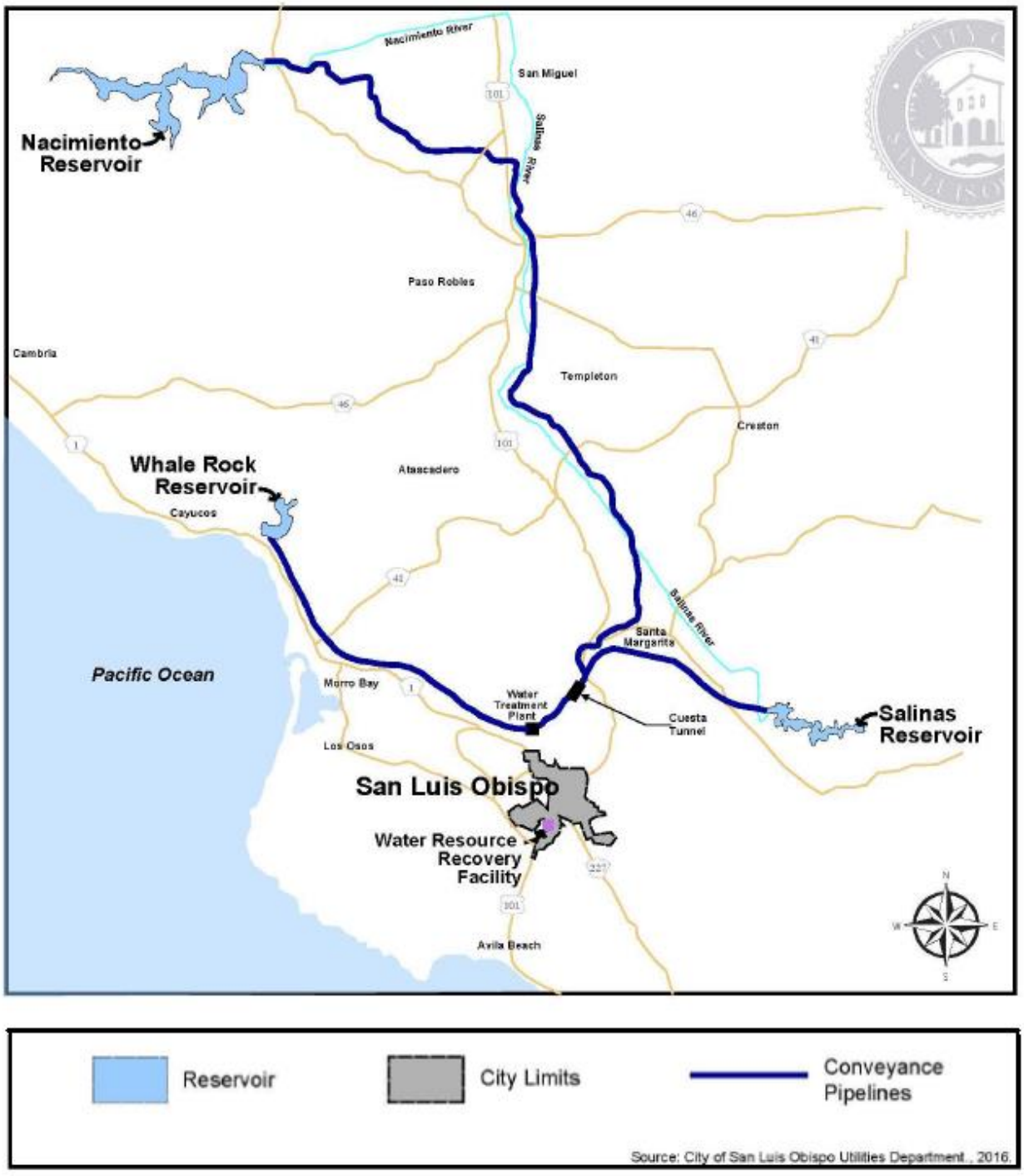

Figure 1. Map of Key Water Infrastructure.

The City uses the growth rate and population projections from the City's General Plan Land Use Element (1% annual growth rate and 57,200 persons in 2035). To comply with State requirements, the City's 2020 Urban Water Management Plan (UWMP)[4] projected population through 2040. The City assumed an annual population growth of one percent for the five years from 2035 to 2040, yielding a future population of 60,118 in 2040. Table 1 provides the City's actual 2020 population and population projections to 2040.

Table 1. Projected and Actual City Population.

	2020	2025	2030	2035	2040
Land Use Element (2014), Projected Population[1]	48,826	51,317	53,934	57,200	60,118
Actual City Population[2]	45,920	---	---	---	---

[1]City of San Luis Obispo, General Plan, Land Use Element, Table 3, 2014.
[2]Population estimate for the City of San Luis Obispo is from the California Department of Finance website at: www.dof.ca.gov/forecasting/Demographics/Estimates/e-1/

The City is a civic, economic, and cultural hub on the Central Coast. With an influx of employees to major regional employers, the City has an estimated daytime population of up to 90,000 persons. Public sector jobs account for a sizeable portion of the job market, including California Polytechnic State University (Cal Poly) and the County of San Luis Obispo. Per the June 2019 Cal Poly Campus Master Plan[5], student enrollment, faculty, and staff is anticipated to grow from just over 24,000 at the 2015 baseline mark, to nearly 29,000 people by the 2035-36 academic year (an average increase of 200 students per year). Although Cal Poly plans to increase on campus housing and the university has its own water supply source, large portions of the student, faculty, and staff populations reside within City limits and visitors frequently visit or stay in the City for university related events. In addition to local events, the City is also a popular tourist destination due to its proximity to beaches and open space areas, historic downtown, and its overall vitality. The City's tourism is at its peak during the summer; however, Cal Poly is also out of session at this time, thus reducing the overall daily population served by the City during the summer months.

Water System

The City utilizes water from three surface-water sources for potable (drinking-water) purposes and recycled water from its Water Resource Recovery Facility (WRRF) for non-potable uses. Several upgrades of the City's Water Treatment Plant (WTP) have improved treatment plant resiliency and capacity to meet the City's evolving demands. Treated water is delivered from the WTP to water customers through a system of water mains, storage tanks, and pump stations. The City performs regular system maintenance to ensure reliable water delivery and to reduce water loss. Water demand is measured at customer meters monthly using a contract meter reading service, which allows prompt, accurate, and efficient meter reading. Monthly meter reads also allow the City's Water Resources section to respond to potential concerns of water loss in a timely manner. To increase water efficiency in the community's water distribution and treatment

[4] The City of San Luis Obispo 2020 Urban Water Management Plan can be found at: https://www.slocity.org/home/showpublisheddocument/31041/637673768464130000
[5] The 2019 Cal Poly Campus Master Plan can be found at: https://masterplan.calpoly.edu/docs/cal-poly-campus-master-plan-2019-06-27.pdf

systems, the City has developed a Water Distribution System Operations Master Plan[6], and conducts annual Water Loss Audits.

Water Sources

The City utilizes three surface water reservoirs to meet its potable water demand. Salinas Reservoir, located nine miles southeast of the community of Santa Margarita, has provided water to the City since 1944. Whale Rock Reservoir, located one-half mile east of the town of Cayucos, has been a water source for the City since 1961. Water deliveries from Nacimiento Reservoir, located 14 miles northwest of the City of Paso Robles, to the City began in January 2011. Three distinct raw water transmission facilities deliver water to the City's WTP from the Salinas, Whale Rock, and Nacimiento Reservoirs. The City does not currently rely on local groundwater to serve the community's long-term water supply needs. However, the City has relied heavily on groundwater during past droughts and is planning to resume the use of groundwater pumping in 2026. The City is supplied recycled water from its WRRF, which is utilized for landscape irrigation and for construction water (dust suppression, compaction, etc.). The City will be maximizing the production of recycled water with the upgrade of the WRRF, currently under construction. Figure 1 shows the location of the City's reservoirs and raw water conveyance pipelines.

Water Treatment System

The City's WTP is located on Stenner Creek Road, northwest of the Cal Poly campus. The facility was constructed in 1964 to provide treatment of surface water from Salinas and Whale Rock Reservoirs. The WTP is a conventional plant that includes ozone disinfection, coagulation, flocculation, sedimentation, and filtration. The WTP was originally designed to treat up to eight million gallons per day (mgd). In 1977, the plant was upgraded to provide 11.5 mgd of treatment capacity but has been able to treat up to 12.0 mgd for limited periods during peak summertime water demands. In 1994, the WTP was upgraded to comply with new regulations and to increase the treatment capacity to 16.0 mgd. In 2020, the City entered into a public/private partnership with Pacific Gas and Electric (PG&E) for the Water Energy Efficiency Project at the WTP. Project components included upgrading the ozone generation system, Supervisory Control and Data Acquisition (SCADA) system, plant service water, and improvements to the Transfer Pump Station. The implementation of the Water Energy Efficiency Project is estimated to result in a reduction of energy usage of over 33 percent annually from 2019 WTP operations.

Water Distribution System

The City's potable water distribution system delivers water from the WTP to approximately 16,500 metered customers and over 2,000 fire hydrants via 190 miles of water mains, ten treated water storage tanks, and seven pump stations. The water delivered from the WTP is split into two main distribution networks, the high-pressure side of town and the low-pressure side. The WTP has a large pump station (the Transfer Pump Station) that pumps water to the high-pressure zones which provide service to the higher elevation areas in the City. The transfer pumps take approximately half of the produced water, increase the pressure, and then provide water to Reservoir #2, Cal Poly, and other portions of the City, generally north and east of the Union Pacific Railroad tracks. Water flows by gravity directly into the lower pressure zones from the WTP's

[6] The City of San Luis Obispo Final Potable Water Distribution System Operations Master Plan, December 2015, can be found at: https://www.slocity.org/home/showpublisheddocument/6439/636009798150130000

onsite clear well treated water storage tanks. The City has ten water storage facilities, seven of which are steel storage tanks ranging in size from 0.04 to 4.0 million gallons and three concrete facilities with a capacity of 0.35 to 7.5 million gallons. In 2023, the combined storage capacity is 23.705 million gallons. The goal of the distribution system is to provide uninterrupted water flow at adequate pressures (between 40 pounds per square inch (psi) and 80 psi) to meet all fire and domestic flow requirements and to minimize system water loss due to breaks and leakage. This pressure range will meet the needs of most irrigation sprinklers and other uses and provide adequate pressure for fire sprinkler systems. Preventative maintenance is performed to minimize water service disruption, prolong system service life, and reduce water loss.

The water distribution team is currently in the process of updating mechanical meters to digital meters that will allow the City to utilize Advanced Metering Infrastructure (AMI) to read water meters through a cellular network. This system will provide customers a portal to track their water use and be alerted of potential water leaks. Automatic reads will also allow the City to eliminate the need for contract meter reading, identify instances of potential water waste or leaks more quickly, and improve customer service operations.

Contract Meter Reading

In January 2015, the City executed its first water meter reading contract to address irregular billing period lengths and billing dates during the City's Average Winter Water Use billing cycle. Meters are read at the beginning of each month utilizing a contract meter reading service provider. The use of this service makes it feasible to have all of the City's water meters read in one week and for billing dates to be standardized for all ratepayers. Contract meter readers also take pictures of water meter reads that are outside a normal range of water consumption. Prior to contract meter reading, Water Resources staff had to visit a property to re-read a meter if the meter read appeared outside of a normal range. Staff are now able to utilize the picture taken by the contract meter reader to inform customers of the potential for a water leak or another cause of high consumption. The pictures have also reduced the number of billing errors related to misread meters. The City continues to utilize a contract meter reading service provider in 2023 and looks to expand the efficiencies gained through use of these services, and associated technology, in the future.

3. WATER SUPPLY AND DEMAND

Water Supply

Water supply reliability is the City's ability to meet the water needs of its customers under varying conditions. The City estimates annual Water Supply based on Water and Wastewater Management Element (WWME), Section 3[7]. This method incorporates Safe Annual Yield from Salinas and Whale Rock Reservoirs as determined through the City's 2018 Safe Annual Yield Model, the City's contractual amount of water from Nacimiento Reservoir (Dependable Yield), the prior Calendar Year volume of Recycled Water utilized by the City, and reduction in reservoir storage caused by siltation as directed in WWME Policy A 4.2.2. As described in Chapter 6 of the City's 2020 UWMP[8], the City assesses water supply reliability by analyzing the hydrological variability of the City surface water reservoirs (Salinas, Whale Rock, and Nacimiento), regulatory variability, climate conditions, and other factors that may affect the City's water supplies and customer water uses. This analysis is done using the City's Water Projection model and applies worst-case drought conditions according to guidelines set forth in the UWMP plan documentation. The City accounts for the water supplies necessary to meet community needs using the methods detailed in WWME Section 5. The amount of water needed to serve the City's future residential and non-residential water demand is termed the primary water supply. The primary water supply is calculated using the build-out population identified in the General Plan, Land Use Element (2014) and 117 gallons per capita per day (GPCD), which is the maximum allowed per capita water use under the Water Conservation Act of 2009 (SB X7-7)[9].

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[7] The City of San Luis Obispo *General Plan, Water and Wastewater Element* is available at: https://www.slocity.org/home/showdocument?id=6649

[8] The City's *2020 Urban Water Management Plan* can be accessed from the California Department of Water Resources, WUEdata Portal at: https://wuedata.water.ca.gov/uwmp_plans.asp?cmd=2020

[9] *Senate Bill No. 7 – Water conservation*, is available at: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200920107SB7

Fiscal Year (FY) 2022-2023 (July-June) available water supply was 10,183 acre-feet (AF; Table 2). Results from the City's Water Projection Model demonstrate that this is a reliable estimate of supply availability for the Current Year as well as extended drought periods (greater than 10 years).

Table 2. Annual Water Supply for Fiscal Year 2022-23.

Water Source	Annual Water Supply (AF)	Description
Nacimiento Reservoir	5,482	Dependable Yield[1]
Salinas & Whale Rock Reservoirs	4,910	Safe Annual Yield[2]
Recycled Water	291	2022 Annual Usage[3]
Siltation from 2010 to 2060	(500)	WWME Policy A 4.2.2[4]
Total Availability	10,183	---

[1]Dependable Yield is the contractual amount of water the City has rights to from Nacimiento Reservoir.
[2]The City's Safe Annual Yield model was updated in 2018.
[3]The quantity of recycled water included (291 AF) is the actual prior year's usage (calendar year 2022) per General Plan Water and Wastewater Management Element Policy A 7.2.2.
[4]Reservoir siltation is a natural occurrence that reduces storage capacity over long periods, resulting in the reduction of safe annual yield.

Water Demand

The FY 2023 *calculated* potable demand was 6,262 AF based on the 2023 population of 47,788 and per-capita daily demand of 117 GPCD. The *actual* FY 2023 demand shown in Table 3 (4,935 AF) is lower than the estimated demand because of more efficient water use (92 GPCD) and variations in water needs caused by annual climate variations. The City's total water demand has not increased at a rate that follows the rate of population growth (Figure 2). In fact, community-wide water use has decreased since 1987 when it was at a high of 182 GPCD. The *residential* GPCD (R-GPCD) for the City during FY 2023 was 53 R-GPCD, which is considerably lower than the San Luis Obispo County average of 70 R-GPCD for 2022, according to the California Water Board's Water Conservation Reporting[10]. The FY 2023 non-potable demand was 231 AF. This represents recycled water used for irrigation which acts to offset potable water use.

[10] The California Water Board Water Conservation and Production Reports can be found at: https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/conservation_reporting.html

Table 3. Water Supply Use by Source for Fiscal Year 2023.

	2023 Fiscal Year Water Supply Use (AF)[1]	Percentage of Annual Use
Nacimiento Reservoir	2,096	42%
Whale Rock Reservoir[2]	1,660	34%
Salinas Reservoir	948	19%
Recycled Water	231	5%
Groundwater	0	0%
Total City Water Demand	4,935	100%

[1]Values are rounded.
[2]Water delivered to Cal Poly State University is excluded from the City's water demand, as Cal Poly has its own water storage and water diversion rights in Whale Rock Reservoir.
[3]Groundwater was not used for potable purposes during FY 2022.

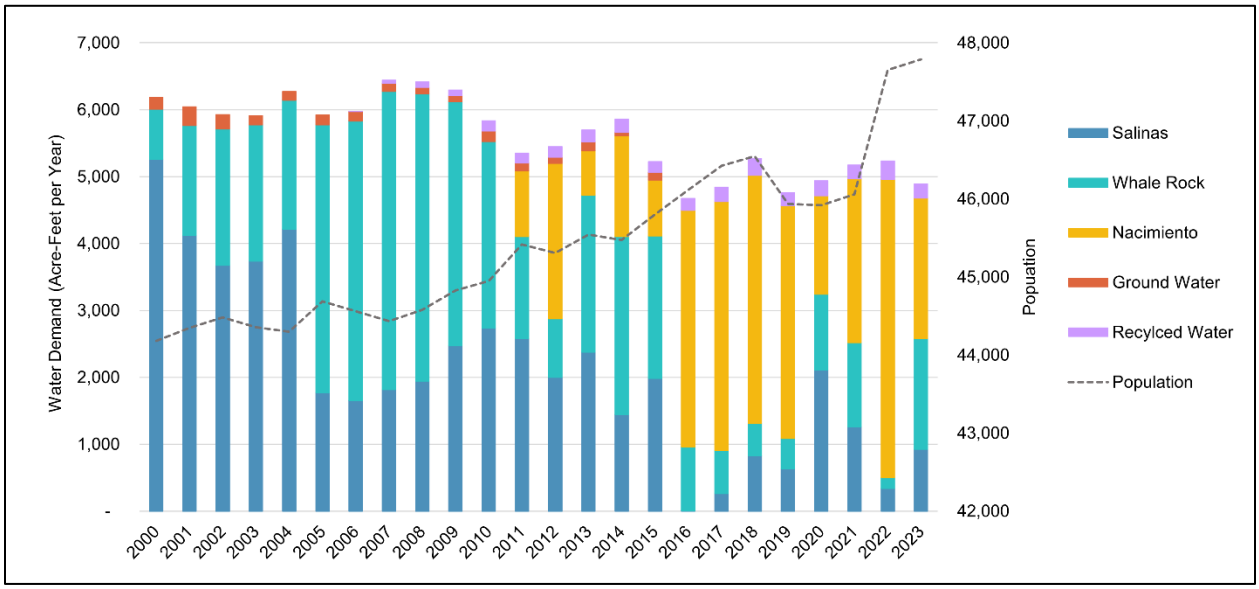


Figure 2. Water Demand by Source (FY2000-2022).

Analysis of Water Use by Customer Group

The City has several different customer types, which can primarily be categorized as residential, commercial industrial and institutional (CII), landscape, and recycled water users. These categories are then further broken down into classifications based on facility. These classifications allow the City to better understand specific customer water needs, develop more effective water conservation programs, and establish fair and equitable water rates.

Residential Water Use

Residential water use is comprised of single-family residences (SFR), multi-family residences (MFR), mobile home parks, and homestays. As displayed in Table 4, in FY 2023 most of the City's potable demand was for SFR use (50%), followed by MFR (17%). During FY 2023, 2,849 AF of water was utilized by all residential water customers in the City. Residential demands are

generally greatest during the period May through October when precipitation is generally low, and temperatures are highest. This suggests that residential demand is driven by outdoor irrigation during hot, dry periods. During the cooler, winter months when landscape irrigation is minimal, the R-GPCD can be used as a rough estimate of indoor residential water use; for the City this value averages about 44 R-GPCD for the period 2015-2022.

Table 4. Water Demand by Customer Category for Fiscal Year 2022-23.

Customer Category	Water Demand (AF)	Percent of Total Demand
Single Family Residential	2,072	50%
Multi-Family Residential	704	17%
Commercial	882	21%
Institutional	109	3%
Industrial	34	1%
Dedicated Residential Irrigation Meters	73	2%
Dedicated CII Irrigation Meters	235	6%
Total Potable Water Demand	4,108	100%

Commercial, Industrial, and Institutional (CII) Water Use

CII water use varies based on the type and size of operations, the facility's water demands (landscaping and plumbing fixtures), and the water practices in place. The City's CII customers are categorized into 28 classifications, which are detailed in the Appendix A1 of this plan. These classifications allow the City to identify potentially abnormally high-water users within each classification and to estimate water use of new businesses proposed for development within the City. CII water demand, not including landscape irrigation demand, accounted for approximately 25% (1,025 AF) of potable water demand during the FY 2023.

Landscape Water Use

Landscape water use is comprised of City Park landscaping, City landscaping (i.e. medians, parkway, and facility landscaping), residential landscaping, and CII landscaping. The City's municipal code requires that nonresidential, multifamily, or mixed-use properties with one thousand square feet of landscaping or greater use a dedicated irrigation meter (DIM) to measure landscape irrigation demand[11]. DIMs allow customers to more precisely understand water used for landscaping and identify leaks or other issues associated solely with the irrigation system. This allows property owners to make more informed decision about their overall water consumption and can assist in efficient water use. Additionally, forthcoming regulations from the State of California will require the use of DIMs on certain CII properties, and the City's policy requiring DIMs positions it well to meet those regulations. About 235 AF of water was measured by DIMs at CII properties in the City in FY 2023. This is approximately 6% of the City's potable water use for that year.

Recycled Water Use

The primary use of recycled water in the City is for landscape irrigation with the majority of that use occurring from May through October. About 231 AF of recycled water was used for landscape

[11] City municipal code 13.04.130, Water Meters is available at: https://sanluisobispo.municipal.codes/Code/13.04.130

irrigation in FY 2023. Of this amount 45% was utilized to maintain City landscape areas, including parks, 23% for MFR landscaping, and 32% for CII landscaping and private parks. About 26 AF of recycled water was used for construction water in FY 2023. The City has identified a "seasonal surplus" of recycled water available in excess of the required discharge to San Luis Obispo Creek (5 AF per day as required by the National Oceanic and Atmospheric Association, National Marine Fisheries Service in 2005) and recycled water for landscape irrigation and construction needs. As only a limited amount of landscape irrigation takes place from November to April (seasonal off-peak period), more than 6 AF per day of recycled water is available during the seasonal off-peak period. An upgrade of the WRRF is underway, which will accommodate the City's buildout and maximize recycled water production. The upgrade will enable the City to maximize beneficial use of recycled water, including consideration of either direct or indirect potable reuse in the future. Until potable reuse is implemented, the City is focused on expanding the use of recycled water within City limits to help offset potable water use. Per the City's Recycled Water Master Plan, recycled water use is projected to increase by 10 AF per year.

Conservation as a Source of Supply

Water conservation above and beyond the state's regulations can be considered a source of water supply because the City retains that volume of water in its reservoirs and groundwater aquifers for future use. Per SB X7-7, the City is required to meet a per-capita target of 117 GPCD. Prior to FY 2010 the City exceeded the water conservation target; per capita water use for the City was 129 GPCD in FY 2007 and FY 2008 (Figure 3). Since FY 2010 the City is consistently below the SB X7-7 target and the water conservation mandates enacted by the State during the 2015-2017 drought reduced the City's annual demand to its current levels of around 100 GPCD, while current water conservation efforts are aimed at maintaining or reducing per-capita water use. Average annual water supply resulting from water conservation for FY 2010-2023 is 813 AFY, or about 20 percent of the City's FY 2023 potable demand.

The City accounts for the increase in available water supply resulting from water conservation by including it in its water supply accounting. In addition to the Primary Water Supply described above, the City estimates a Reliability Reserve and a Secondary Water Supply. The Reliability Reserve acts as a buffer for unforeseen or unpredictable long-term impacts and the water supply that exceeds the City's Primary Water and Reliability Reserve is referred to as the City's Secondary Supply.

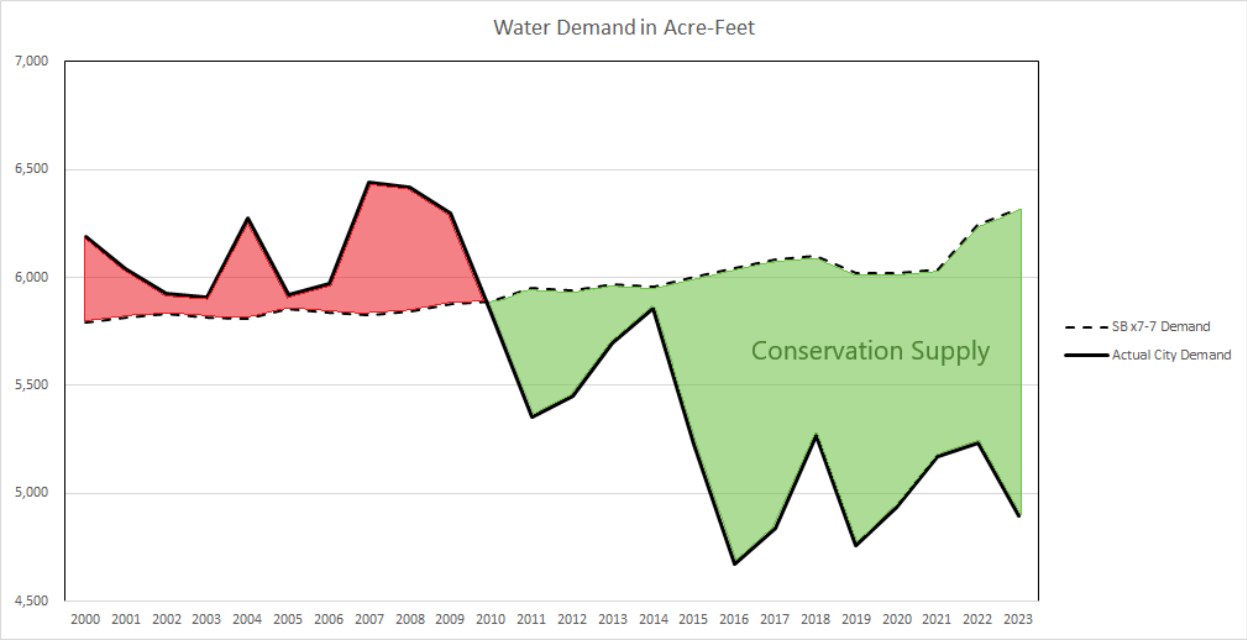


Figure 3. Actual City Water Demand Versus SB X7-7 Estimated Water Demand (FY 2000 - FY 2023).

Impact of Plumbing Code or Building Code on Water Use

Plumbing and building codes serve as instrumental tools for water conservation efforts. These type of conservation efforts are considered "passive" and result in long-term, reliable water savings as old inefficient fixtures are replaced over time. Federal and state policies such as the Federal Energy Policy Act of 1992[12], the California Code of Regulations Title 20[13], and the California Code of Regulations, Title 24, California Green Building Standards Code (CALGreen Code)[14] mandate fixtures being sold or installed meet specific water efficiency standards. These include low-flow toilets, urinals, showerheads, faucets, and pre-rinse spray valves, which are designed to limit water usage without compromising performance. City of San Luis Obispo plumbing codes also mandate the use of water-efficient fixtures and designs, aligning with statewide plumbing codes and water conservation initiatives.

The City adopted Chapter 17.70.220 Water-efficient landscape standards[15] as a part of its municipal code that promotes the use of native and drought tolerant materials and sets water efficient landscape standards consistent with State law. Systems must be designed for efficient,

[12] The Federal Energy Policy Act of 1992 can be accessed at: https://afdc.energy.gov/files/pdfs/2527.pdf
[13] The California Code of Regulations, *Title 20. Public Utilities and Energy* can be accessed at: https://www.energy.ca.gov/sites/default/files/2021-07/Title%2020%20Updated%20July%2023%2C%202021.pdf
[14] The California Code of Regulations, Title 24, California Green Building Standards Code (CALGreen Code) can be found at: https://codes.iccsafe.org/content/CABC2022P1/california-code-of-regulations-title-24
[15] City of San Luis Obispo municipal code 17.70.220, Water-efficient landscape standards is available at: https://sanluisobispo.municipal.codes/Code/17.70.220

conservative use of water that are in accordance with the City's Engineering Standards[16]. Community Design Guidelines[17] also required proposed landscaping to set goals to reflect the local climate and conserve water, including considering water shortages, effects of drought, plant loss, and increased water cost. Proposed developments must also incorporate features such as permeable surfaces that facilitate the absorption of water into the ground as a part of the City's Community Design Guidelines. Mandating water-efficient fixtures and optimizing outdoor water use create a foundation for sustainable water practices that create long-term water savings.

Overall Supply and Demand Balance

Per California Water Code (CWC §10632.1.)[18] the City conducts an Annual Water Supply and Demand Assessment (Water Supply Assessment) for the purpose of (i) evaluating its water supply reliability for the current year and one subsequent dry year and (ii) generating and submitting an Annual Shortage Report to the California Department of Water Resources. The City converts annual supply and demand values to monthly volumes for the purposes of this Water Supply Assessment so that potential seasonal water shortages are highlighted. Monthly supply and demand volumes are calculated using average monthly demand as a percent of average annual historical demand for the period following the previous drought (2015-2017) and including the most recent drought. These monthly average demand percentages are then applied to the annual supply and demand to provide monthly volumes. The City's FY 2022 Water Supply and Demand Assessment showed that the City consistently has a water surplus (supply is greater than demand) month to month for a typical year and also a subsequent, hypothetical dry year.

For longer-range estimations of supply and demand balance the City utilizes a Water Projection Model to test both hypothetical and actual water demand scenarios and to forecast how long water supplies will sustain the community under specific conditions. The Water Projection Model accounts for the storage in the City's surface water reservoirs, in conjunction with other available resources (i.e., groundwater and recycled water), needed to meet the City's water demand. The model uses historical hydrologic information (rainfall, evaporation, inflow) based on the average for the worst drought period (2012 to 2014). Other data included in the model are:

- Water entitlement
- Current reservoir levels/storage
- Average GPCD community water demand
- Rainfall
- Temperature
- Evaporation
- Existing population
- Estimated population growth

[16] Standard Specifications & Engineering Standards August 2020: https://www.slocity.org/home/showpublisheddocument/27919/637341402080900000

[17] San Luis Obispo Community Design Guidelines: https://www.slocity.org/home/showpublisheddocument/2104/635491488007630000

[18] Cal. Water Code §10632.1. can be accessed at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=10632

The City uses the Water Projection Model to study the potential impacts of various intensities of drought conditions, including increased air temperature and evaporation rates, along with decreased precipitation. Utilizing the Water Projection Model as part of its water supply management strategy, the City can foresee whether a water supply shortage is anticipated in any given year and the severity of a shortage based on the availability of the City's different sources of supply and water demand trends. When utilizing the Water Projection Model to estimate future water supply and demand, GPCD decreases in accordance with the 2020 WSCP. For example, water demand is calculated using an initial value of 117 GPCD and decreases by ten percent (corresponding to a ten-percent decrease in water use) to 105 GPCD when available supply is less than 5-years of estimated annual demand. This ten percent reduction is in alignment with the demand reduction that the City projects it would achieve from water conservation measures outlined in the WSCP. Model results using FY 2022 data showed that the City would have adequate supply to meet City demands without implementing the WSCP for ten years of continuous drought conditions (Figure 4).

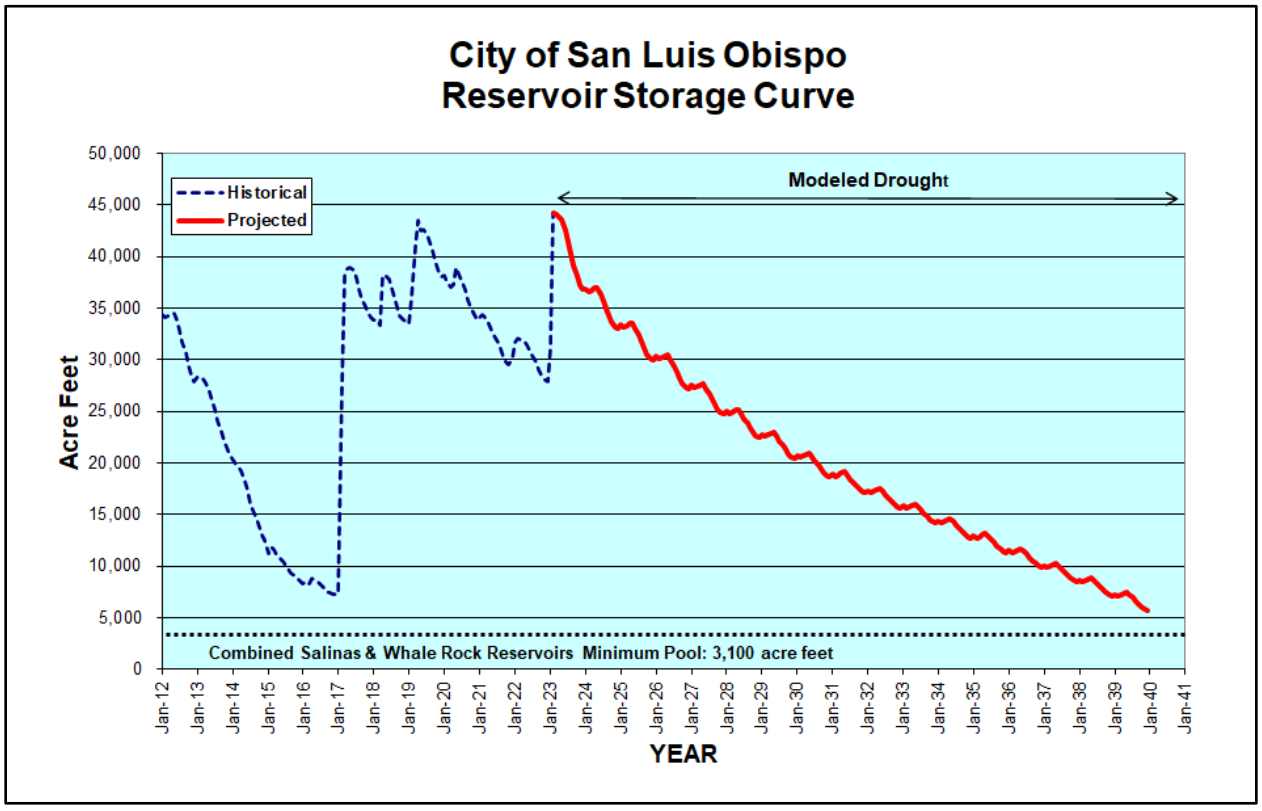


Figure 4. Historical Storage Volume, in Acre-Feet, in Salinas and Whale Rock Reservoirs, and Projected Storage Volume Through an Extended Drought Period.

Water Shortage Contingency Plan

The City adopted the 2020 WSCP on June 15, 2021[19]. The City's WSCP provides the foundation for a staged response to worsening water shortage conditions. A water shortage could occur due to drought, earthquake, infrastructure failure, or another emergency. Drought may occur with unpredictable frequency, intensity, and duration. An update to the City's Water Conservation Ordinance (Chapter 13.07 of the Municipal Code), established the regulations and procedures for implementing this Plan and updated the ordinance to comply with newer requirements under Water Code Chapter 3.3: Excessive Residential Water Use During Drought.

The City's water shortage response is dependent on the ability to temporarily augment supply and/or reduce water demand. The City's water shortage response would combine a variety of strategies including outreach, indoor water efficiency regulations, and outdoor irrigation restrictions, each increasing in intensity as the shortage persists and the City's water supplies are further restricted. Implementation of these restrictions is necessary to conserve the City's water supply for the greatest public benefit regarding domestic use, sanitation, and fire protection. It is the City's goal to implement water demand reduction programs that will achieve measurable water savings without requiring customers to make significant lifestyle changes. In the more advanced water shortage stages lifestyle and water-use habit changes will be necessary.

The City's WSCP consists of seven stages. The multi-stage approach provides different levels of response for a water shortage event ranging from a ten percent supply deficiency up to a 50 percent or greater deficiency. The purpose of establishing water shortage stages is to clearly define the severity of the shortage and establish appropriate targets for demand reductions. Defining these stages allows the City to respond to worsening conditions, with each stage "triggering" different actions. City Council may adopt variations of these Water Shortage Response Actions, independent from the stage resulting from the use of the Water Projection Model, to strategically address the current water shortage situation.

[19] The City's 2020 Water Shortage Contingency Plan can be accessed at: https://www.slocity.org/home/showpublisheddocument/31039/637673766931570000

4. HISTORICAL AND CURRENT WATER CONSERVATION PROGRAM

Water conservation is an integral part of the City's overall water management strategy and was first referenced as a part of the City's water management policies in 1973. In 1985, the City adopted the Annual Water Operational Plan policy that established water conservation as a means of extending water supplies during projected water shortages. Many technological and philosophical changes have occurred since that time, proving that water conservation can be used for both a short-term corrective measure to address immediate water supply shortages, and as a long-term solution to water supply reliability.

The City's water conservation program aims to implement water conservation measures that optimize water supply, treatment, and delivery requirements to assist with the long-term sustainability of water resources. Water conservation measures are those programs and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies. These water conservation measures also allow the City to continue to achieve compliance with all state water reduction and efficiency regulations. The following provides a summary of the City's current and historical water conservation efforts broken down into operational (internal facing) and external (customer oriented) water conservation programs. Water conservation programs the City has implemented due to State or Federal requirements are outlined in the Regulatory Compliance section of this plan (Section 5).

Operational Programs

Operational programs encompass the programs and policies in place that prevent water waste, reduce water loss, and address water efficiency within the City's water service operations internally. By implementing and adhering to these programs, the City aims to establish a sustainable water service system that not only conserves water but also decreases operational costs and fosters long-term environmental stewardship.

Metering and Billing

In accordance with the 2020 UWMP guidebook[20] and CWC § 527 (2022)[21], the City has implemented universal metering of all service (public and private) connections. Metering service connections encourages water conservation by effectively billing customers for the quantity of water consumed, forming a relationship between water consumed and the total cost of the water bill. The City also meters all water supply sources, including the City's three primary water sources, groundwater, and recycled water sources. Having a fully metered system allows the City to effectively monitor and analyze where water losses are occurring and where additional water savings may be possible. The City continues to implement effective metering requirements for new developments by requiring separate water meters for residential, non-residential, and landscape use and is in the process of upgrading all water meters to digital water meters to deploy AMI in the future.

In addition to metering water consumption, the City's water and wastewater rates are set to promote water conservation practices. All meters within the City are read and billed monthly and the City's Utility Billing team performs routine billing audits to reduce data handling errors. Although meters are read and customers are billed in hundred cubic feet (HCF), customers are provided conversion factors on both paper and online bills to convert consumption into gallons. The City also provides sanitary sewer collection and treatment service for the community. Sewer rates for residential customers are based on the volume of metered water used each month and are set using wintertime water use. If in the event a meter cannot be read, for example due to repairs, or is not registering the City may estimate usage based on historical customer usage. However, the City makes every effort to avoid estimating reading and attempts to limit estimated readings to no more than twice per year per customer. Details on how estimations are computed are outlined in Section 13.04.130[22] of the City's Municipal Code.

Water Loss Control Program

The City has been conducting annual American Water Works Association (AWWA) water loss audits since 2009 to identify and work towards reducing real and apparent losses within the distribution system. Water loss performance indicators identified from the 2016 – 2021 AWWA water loss audits are shown in Table 5 below. These water loss audits are prepared using the AWWA/IWA Water Audit Method, as described in the AWWA Manual of Water Supply Practices – M36, Water Audits and Loss Control Programs, and is validated by a certified Level 1 Water Audit Validator each year. To provide transparency and accountability, these audits are made available to the public on the City's website[23].

[20] The Urban Water Management Plan Guidebook 2020 is available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans/Final-2020-UWMP-Guidebook/UWMP-Guidebook-2020---Final-032921.pdf

[21] 2022 California Water Code, Section 527 is available at: https://law.justia.com/codes/california/2022/code-wat/division-1/chapter-8/article-3-5/section-527/

[22] The City of San Luis Obispo municipal code 13.04.130, Water meters is available at: https://sanluisobispo.municipal.codes/Code/13.04.130

[23] The city's Water Loss Audits from 2016 through 2021 can be accessed at: https://www.slocity.org/government/department-directory/utilities-department/documents-and-files

Table 5. Key Water Loss Audit Metrics.

	2016	2017	2018	2019	2020	2021
Apparent Losses (gal/conn/day)	8.34	12.62	8.99	6.25	6.33	6.28
Real Losses (gal/conn/day)	33.51	32.65	16.00	13.54	15.47	23.57
Non-Revenue Water as a Percent of Cost of Operating System	2.8%	3.3%	2.3%	2.2%	2.8%	3.5%
Infrastructure Leakage Index (ILI)[1]	2.02	1.96	0.97	0.93	1.06	1.60

1. The Infrastructure Leakage Index (ILI) is a ratio of the Real Losses to the Unavoidable Real Losses. This performance indicator is dimensionless. In California, the median ILI is 1.4.[24]

To further reduce water loss, the City conducts water service line replacement projects based on service line age and condition, along with extensive programs to replace defective polybutylene service lines that have been identified to have a high likelihood of failure. Water meter replacement programs exist to replace meters based on age, consequence of failure, and likelihood of failure. Along with these maintenance programs, the City also implements a valve exercising program that ensures water mains can be isolated during repairs to minimize the amount of water lost during water main breaks and repairs.

In 2015, the City completed its Potable Water Distribution System Operations Master Plan[25] which identifies and prioritizes best practices, actions, and goals regarding future maintenance and capital improvement projects to help reduce future water loss due to infrastructure failure. That work effort included development of a comprehensive hydraulic model of the City's water distribution system. The hydraulic model is used to determine available service pressure and is maintained annually to remain current with the waterline replacement project, new water main installations, zone consolidations, and other projects. In 2019, the City began using acoustic correlation equipment where acoustic sensors are attached to water valves to measure the speed at which sounds waves travel along the pipe. These sensors effectively listen to water flowing through the pipe and can detect when water is escaping through a leak. The location can then be pinpointed within about two feet, which helps reduce excavation costs. Using this tool regularly, the City can more accurately locate small leaks, resulting in less damage to surrounding infrastructure, further optimize its capital spending, minimize water main breaks, water loss, and damage from leaks, and better manage aging water infrastructure. Moving forward, the City plans to continue to work to reduce real and apparent water losses by replacing aging infrastructure to prevent pipe breaks and leaks, implementing a comprehensive meter testing and calibration program to ensure water meters are functioning per manufacturers' specifications, and continuing with its comprehensive meter replacement strategy to ensure water used at homes and businesses is correctly recorded.

Recycled Water Program

The City of San Luis Obispo has been utilizing recycled water as a component of its multi-source water supply since 2006. Recycled water acts as a means of water conservation by offsetting usage that would have otherwise utilized the City's potable (drinking water) supply. Additionally, because recycled water is reliant on wastewater flows, and therefore less dependent on weather

[24] The California Department of Water Resources Water Loss Audit Reports and associated data for calendar years 2016 to present can be found at: https://wuedata.water.ca.gov/

[25] The City of San Luis Obispo Final Potable Water Distribution System Operations Master Plan, December 2015, can be found at: https://www.slocity.org/home/showpublisheddocument/6439/636009798150130000

than the City's surface water reservoirs, recycled water helps to diversify the City's water supply portfolio and acts as an alternative, reliable water supply during times of drought.

Currently there are 54 recycled water sites throughout the City. Each site is required to have a site supervisor, which must undergo a site supervisor training and complete quarterly reports including identifying water waste runoff and system deficiencies. Site supervisors are either property owners, property managers, or landscape maintenance professionals. Although recycled water is often not subject to water efficiency ordinances and state-mandated reduction requirements, droughts across the State, and specifically in the Central Coast region, have contribute to a heightened interest in the City's recycled water supply over the years. Improvements in water conservation or changes in use, such as potable reuse, would impact how recycled water is used throughout the City. Additional information regarding the City's recycled water program can be found in the City's 2017 Recycled Water Master Plan[26].

External Programs

External, customer-facing programs are instrumental in engaging the community and promoting water conservation practices beyond the City's water service operations. These programs are designed to educate and encourage customers to play an active role in preserving water resources and adopting sustainable water use practices. By implementing these programs, the City aims to empower its residents and businesses to make informed choices that contribute to a more water-conscious community and cultivate a culture of responsible water consumption.

Water Use Reports and Audits

The City's Water Resources section offers no-cost assistance to both residential and non-residential customers who have high water use or would like to reduce their water consumption. Water resource technicians examine historical water use and the property with the customer to identify potential water saving opportunities and provide information about irrigation reduction methods, proper property maintenance, confirm meter functionality, water leak determination, low flow fixtures installation, and general information on methods for reducing water use. This service is often offered proactively to customers who have unexplained high use, water waste violations, or other instances where a review could provide potential water savings. However, customers may also request assistance at any time. To maximize staff time and resources, staff first attempt to work with customers over the phone or via email. If staff are not able to contact a customer, they will conduct a site visit and either make contact in person or leave a door hanger. Customers

[26] The City of San Luis Obispo 2017 Recycled Water Master Plan is available at: https://www.slocity.org/home/showpublisheddocument/14955/636269147657570000

are also provided a copy of the City's Water Audit Worksheet[27] to conduct a more in-depth analysis of indoor and outdoor daily water use. In the future, the program may be expanded to include more in-depth leak detection methods (i.e. acoustic listening devices) and irrigation audits.

Complimentary Devices and Financial Incentives

The City provides various water conservation devices as a complimentary service to the community. Currently, the program provides low-flow showerheads, faucet aerators, flow meter bags, five-minute shower timers, dish squeegees, leak detection dye tablets, hose nozzles, soil moisture meters, save water posters, and lawn signs. Customers are encouraged to notify the City if there are items they are interested in that are not currently made available as part of the program. Staff will continue to stock and promote the use of these and other complimentary items as funding allows.

The City has also provided various rebates for water conservation devices and actions over the years. A rebate is a partial refund after a customer has purchased a water-efficient device to incentivize customers to purchase a water-efficient device over a less efficient device. During the drought in 2015, the City Council authorized $100,000 in support of effective rebate programs. Rebate of $100 dollar were provided for qualified toilet and washing machine replacements. City Council authorized $30,000 in 2022 to launch an updated rebate program. Beginning in 2023, the City now offers rebates for high-efficiency toilets and urinals, large landscape smart irrigation controllers, and water-efficient restaurant dipper wells. Current rebate funding is equitably allocated between SFR, MFR, and CII account holders, ensuring the program does not favor one customer class. Should funding not be exhausted by one customer class type, staff will reevaluate allocating funds to other customer class types, should those classes have fully exhausted their own allocated funds. Lastly, the City has also entered into a partnership with Rachio through the California Water Efficiency Partnership to offer discounted smart irrigation controllers to single family residences. Offering rebates and discounted smart irrigation controllers assist customers to modify their irrigation systems to be more efficient and apply water in a more efficient manner.

[27] The City of San Luis Obispo Water Audit Worksheet is available at: https://www.slocity.org/home/showpublisheddocument/30756/637883714862000000

Public Information and Outreach Programs

The City has used public education and outreach as a mechanism for decreasing water use in the City and for promoting water conservation since the 1970s. Public education is often a component of water conservation programs aimed at encouraging customers to proactively decrease water usage and participate in conservation rebates and programs. Staff routinely update and maintain the City's water conservation website, release city news articles and e-notifications, participate in local events such as farmers markets, community events, and local career fairs, host community tours at Whale Rock Reservoir, the WTP, and the WRRF, provide informational brochures and printed newsletters, and create social media campaigns (Facebook, Instagram, YouTube, and LinkedIn), and paid radio advertising. Additional public outreach and education programs have included informational welcome emails, "We've Let it Go, California Gold" landscape signs deployed during the drought on turf areas the City maintains, billing inserts, "how to" videos, direct mail campaigns, and meetings with local business groups and homeowners associations. The City is committed to reviewing and modifying the public education and outreach program to ensure that messaging stays effective and relevant. For example, in 2021, the City launched an interactive street sticker campaign, where residents and visitors could scan QR codes on various infrastructure locations in order to access an interactive, virtual ArcGIS Storymap[28] of the City's water and wastewater resources and infrastructure. In 2022, staff launched a *Water-Wise Landscape of the Month* competition where residents could submit their yard or nominate neighbors' yards that embrace water-wise landscaping techniques; helping to encourage residents to conduct landscape transformations that adopt climate-appropriate native plants that require little to no supplemental irrigation. Moving forward staff are working to create virtual reality (VR) tours and educational games to educate a wider audience and utilize new, interactive outreach methods.

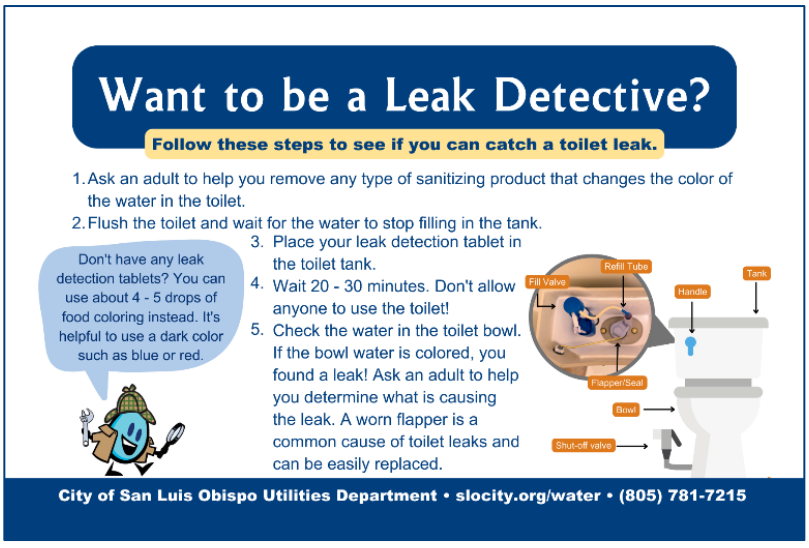
The City has also been a long time member of the San Luis Obispo Partners in Water Conservation, a joint regional effort between local water purveyors in San Luis Obispo County, to promote and collaborate on water conservation and efficiency measures. Participation helps facilitate regional knowledge sharing and educational programs. Most notably, the partnership co-

[28] The City of San Luis Obispo ArcGIS storymap *Get to know YOUR water* can be accessed at: www.slocity.org/yourwater

funded and launched the SLO Water Wise Landscaping website[29], which provides design and installation resources for water-wise landscaping that are specific to microclimates in San Luis Obispo County. The guide provides information on how customers can irrigate based on plant needs and discourages customers from over watering, watering too frequently, or watering during the times of the day when water loss to evaporation and wind is greatest. In addition to the SLO Water Wise Landscaping website, the City also provides information on how customers can find certified water efficient landscape contactors, designers, landscapers, or irrigation auditors on its website.

Children's Specific Outreach

In addition to general outreach, the City has also had a long standing history of working to instill water awareness in children to help further promote households to participate in water conservation and set the stage for students to make informed and appropriate decisions about water later in life. The City provides education programs on various water related topics for San Luis Obispo Coastal Unified School District schools within the city. The spotlight program, *The Story of Your Water,* teaches third through fifth graders about the water cycle, water treatment process, water use, water conservation, and water reclamation. At the end of the program students are provided a flow meter bag and toilet leak detection tablets to promote discussing water conservation at home and identifying if their home has a leaking toilet or fixtures that can be updated to low-flow. In addition to classes, the City has hosted art contest and offers tours of the WTP and WRRF.



[29] Waterwise Landscaping for San Luis Obispo County website is available at: https://www.slowaterwiselandscaping.com/

5. REGULATORY COMPLIANCE

California has enacted regulations to promote water conservation and sustainable water management that the City's Water Conservation Programs and Water Conservation and Efficiency Plan must consider. Historically, some of the most important regulations for water conservation in California have included the Soil and Water Resources Conservation Act of 1977[30], which requires urban water suppliers to develop and implement water conservation plans, and the SB X7-7[31], which requires urban water suppliers to establish water conservation targets and report progress toward meeting those targets. Senate Bill 606 (SB 606)[32] and Assembly Bill 1668 (AB 1668)[33] are the most recent water conservation regulations and establish the Long-Term Framework legislation for making water conservation a California way

Making Water Conservation a California Way of Life Framework

In 2018, the California State Legislature passed Assembly Bill 1668 (Friedman, 2018) and Senate Bill 606 (Hertzberg, 2018) which directed the State Water Board to adopt standards for using water more efficiently.

As part of the proposed regulation, Urban Retail Water Suppliers, including the City of San Luis Obispo, will be held to new "urban water use objectives" comprised of indoor residential water use, outdoor residential water use, commercial, industrial, and institutional (CII) irrigation with dedicated meters, water loss, and unique local uses.

[30] The Soil and Water Resources Conservation Act of 1977 can be found at: https://www.congress.gov/95/statute/STATUTE-91/STATUTE-91-Pg1407.pdf

[31] California Water Conservation Act, Water Code Section 10608.28(b) provides methods for calculating urban water use targets that identify per capita use targets that cumulatively result in a statewide 20 percent reduction: https://california.public.law/codes/ca_water_code_section_10608.20

[32] California Senate Bil No. 606, Water management planning is available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB606

[33] California Assembly Bill No. 1668, Water management planning is available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1668&search_keywords=55+gallons+water

of life. This framework establishes standards for water use efficiency and requires local water agencies to set water budgets based on those standards.

Regulatory Programs

Regulatory approaches can be an effective strategy for water suppliers to reduce water use at the service level. In addition to the regulations the City must comply with at the state level, the City of San Luis Obispo has also adopted local regulations that prohibit water waste and require water-efficient plumbing. Below are the current water conservation programs the City has implemented. The City aims to adopt water-efficient codes and standards that are feasible and appropriate to the community.

Water Conservation Regulations

Chapter 13.07 of the City's municipal code, adopted in 1987, outlines water conservation regulations for the City. Under this code, water waste due to substandard, leaky, or faulting water fixtures and water waste due to excessive application are prohibited. City staff conduct routine patrols to monitor water waste and follow set timelines and procedures to ensure community members are addressing water leaks in a timely manner. In addition to these restrictions, restaurants may not serve water to customers except upon request and potable water cannot be used for major construction activities or to wash down sidewalks, driveways or parking areas except to alleviate fire and sanitation hazards.

Plumbing Retrofit Program

In 1992 the City also adopted plumbing retrofit regulations which require all existing residential and CII structures to be retrofitted, if not already equipped with, low water use plumbing fixtures upon sale, change of use, or expansion of use of the property. New developments are required to comply with CALGreen Code[34], which are more restrictive than the City's Municipal Code. Plumbing codes and standards are considered a "passive" water conservation measure that create permanent water-saving potential given a nominal decline in water saving performance over the useful life of a fixture or appliance.

The City's plumbing retrofit verification program was most recently amended on December 7, 2021, to require all indoor toilets, faucets, showerheads, and urinals meet the requirements set forth in California Civil Code CIV § 1101.3[35]. City staff will continue to manage the program and document compliance within the City. All properties that have been certified to have low-flow fixtures are shown via a user-friendly online mapping tool at slowater.org, shown below in Figure 5. This tool also provides the City with a database that can be used to help project the effectiveness of future indoor water fixture rebate, offset, and replacement programs. Water savings from plumbing retrofits is dependent on the number and current water use of existing fixtures; however, this program, along with fixture replacement through various rebate programs, has reduced the City's long-term water demand by an estimated 1,500 AFY.

[34] The California Code of Regulations, Title 24, California Green Building Standards Code (CALGreen Code) can be found at: https://codes.iccsafe.org/content/CABC2022P1/california-code-of-regulations-title-24

[35] California Civil Code, Article 1.4. Installation of Water Use Efficiency Improvements can be found at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=CIV&division=2.&title=4.&part=4.&chapter=2.&article=1.4.

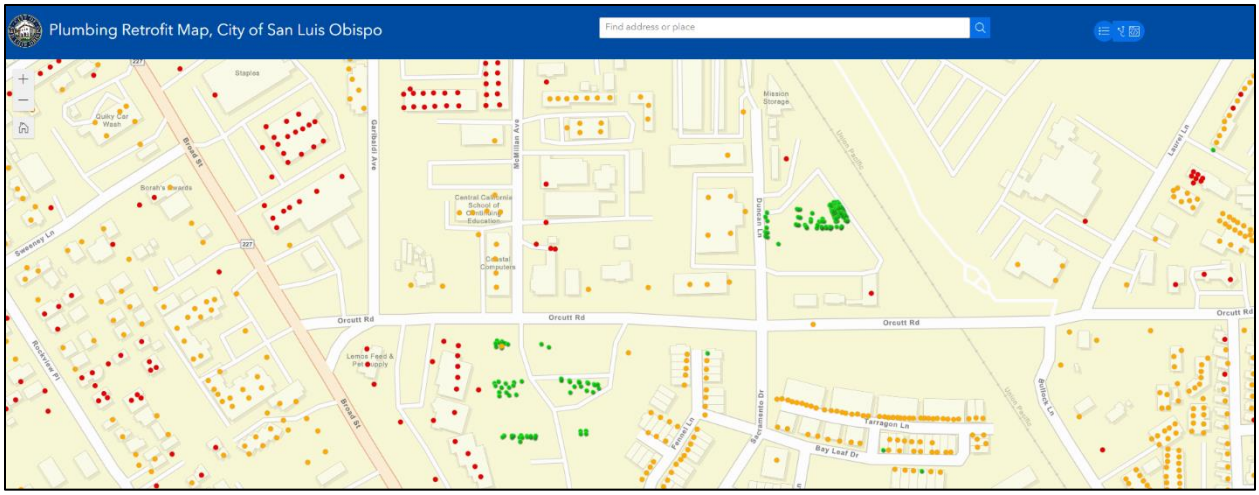


Figure 5. Screenshot of the City of San Luis Obispo's Plumbing Retrofit Portal.

Water Efficient Landscaping Requirements

The California Department of Water Resources first established the Model Water Efficiency Landscape Ordinance (MWELO)[36] in 1993 and requires local jurisdictions to adopt the state's framework or develop alternative water-efficient landscape ordinances that are at least as effective. MWELO sets guidelines for water budgets, irrigation efficiency, plant selection, and other factors to encourage sustainable landscaping practices and reduce water consumption in outdoor spaces. The Utilities Department and Community Development Departments work together to implement these and other water efficiency standards into land-use planning to influence water demand within the community. The water efficiency standards require water efficient design, installation, and maintenance practices to maximize water applied to landscapes on new and rehabilitated landscapes in both residential and commercial settings. It has been estimated that landscapes adhering to MWELO landscape irrigation regulations use 80 percent less water than traditional landscapes.

Future Regulatory Requirements

The City will continue to comply with water conservation related regulations as they are enacted. Currently, the most notably are the future Urban Water Use Objectives (UWUO) set by the Making Water Conservation a California Way of Life Framework. The objectives will include standards for residential outdoor water use, residential indoor water use, CII-DIM outdoor water use, real water loss, variances, and potential bonus incentives. The sum of each respective standard establishes an overall water budget, known as the UWUO, which water suppliers cannot exceed on an annual basis. The City and other water suppliers will be required to meet their overall UWUO and not standards for each specific category.

[36] Information on the California Department of Water Resources, Model Water Efficient Landscape Ordinance can be found at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Model-Water-Efficient-Landscape-Ordinance

Through the City's water conservation programs and policies, water demand over the five-year period between 2016 - 2022 ranged from a high of 97 GPCD in 2017 to a low of 88 GPCD in 2016, as shown in Figure 6, which are below the City's SB X7-7 compliance goal of 117 GPCD. The City's indoor R-GPCD from 2015-2022 averages around 44. California Department of Water Resource's recommended Indoor Residential Water Use Standards are 55 R-GPCD for the years 2020 - 2025, 47 R-GPCD for the years 2025-2030, and 42 R-GPCD beyond 2030. With the continuation of the water conservation measures listed in this plan, the City anticipates ongoing compliance with these mandates into the future.

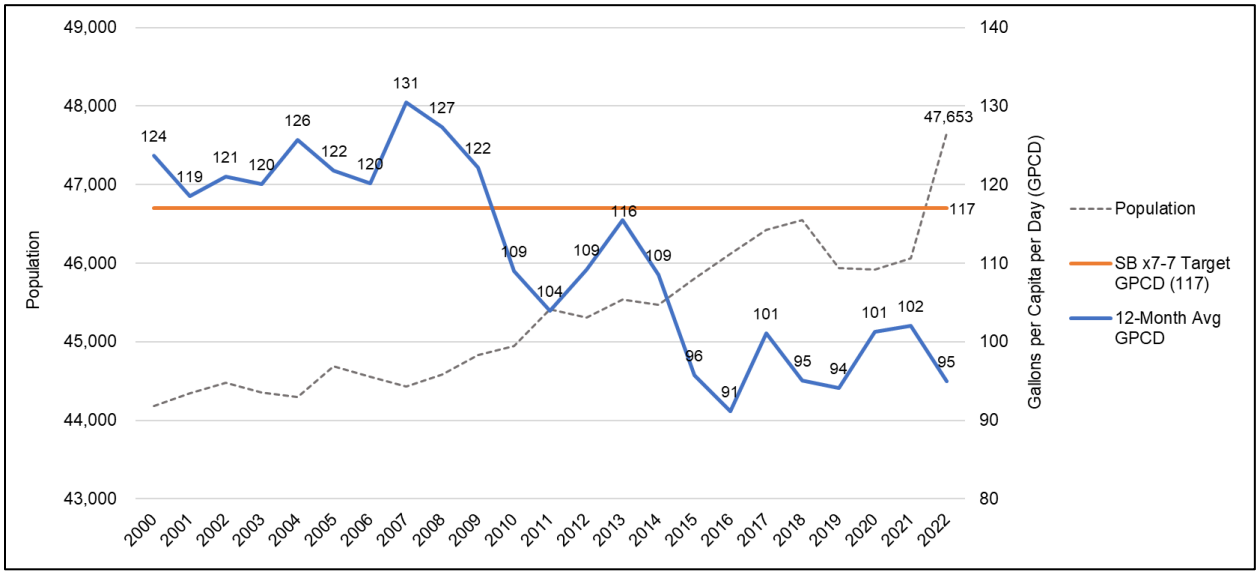
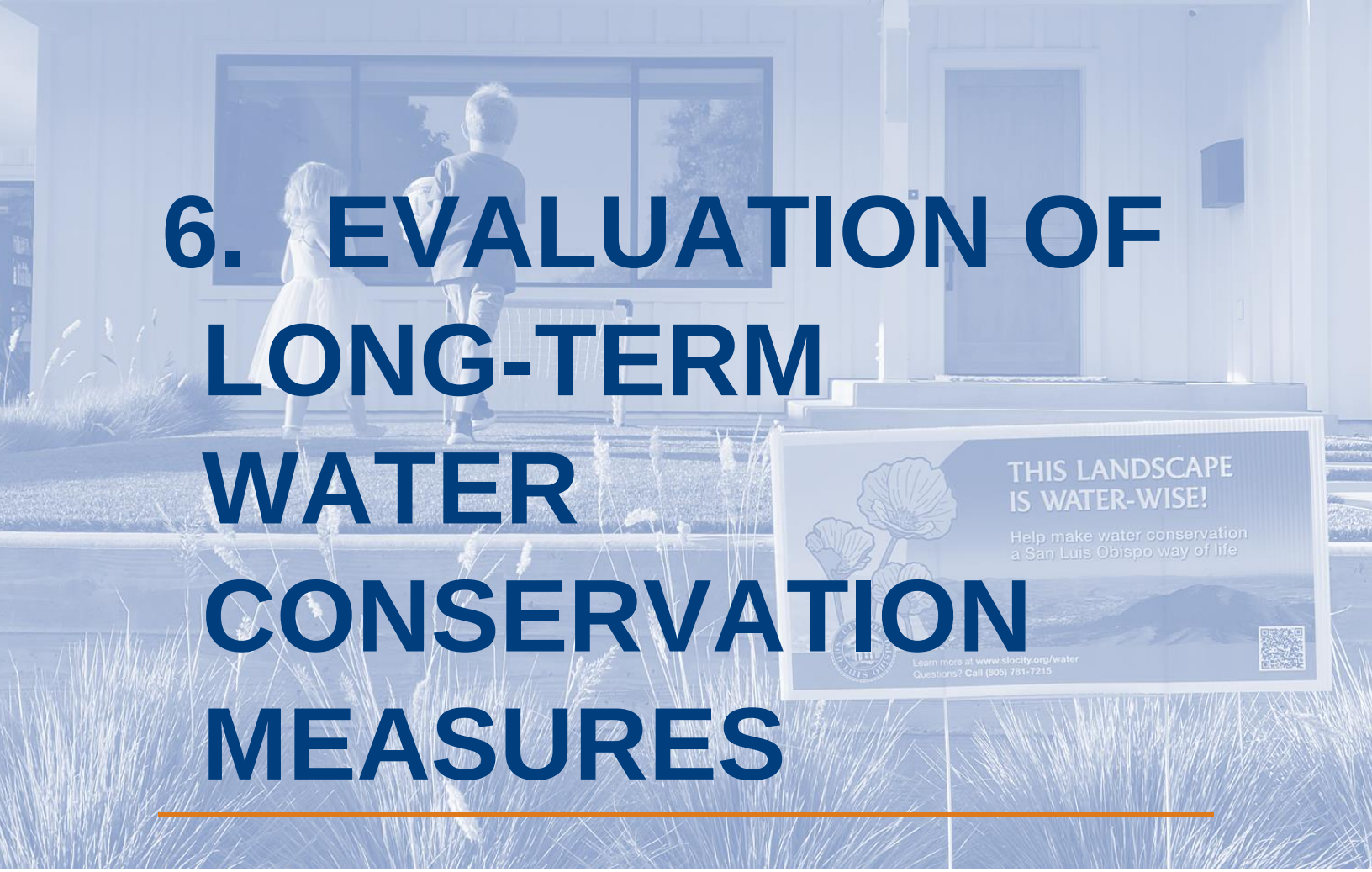


Figure 6. City of San Luis Obispo Annual Per Capita Water Use (in gallons per capita per day, GPCD) Versus Population and the Target Per Capita Use as Determined by SB X7-7, 2000-2022.



6. EVALUATION OF LONG-TERM WATER CONSERVATION MEASURES

Water conservation measures were evaluated using the AWE Water Conservation Tracking Tool[37], which evaluates the water savings and program costs of different water conservation measures for the development of long-range water conservation plans. The model estimates annual demand reduction in AF, which is divided into active and passive demand reduction for the model period. Active demand reduction is the share of estimated water savings that can be attributed solely to the implementation of the conservation program. Passive demand reduction is the estimated share of water savings that would have been generated in the absence of the conservation program by (1) plumbing and energy codes interacting with the natural replacement of toilets, showerheads, and other water-using appliances whose current or future minimum efficiency is dictated by national, state, or local code requirements plus (2) water savings from program freeriders – a participant that would have taken the same water-conserving action in the same timeframe had the program not existed.

The analysis for this plan was conducted in a staged approach to provide an understanding of benefits and costs of a large, comprehensive conservation program (Plan A); benefits and costs of a conservation program targeted at the greatest benefit-cost ratio, regardless of budget restrictions (Plan B); and benefits and costs of a conservation program that provides the greatest benefit-cost ratio within a budget that is representative of the Utilities Department's existing budget (Plan C). The results of the Water Conservation Tracking Tool for each plan are included

[37] Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool can be accessed at: https://www.allianceforwaterefficiency.org/resources/topic/water-conservation-tracking-tool

in the Appendix of this report and described in the text below. The water conservation measures included in Plan A represent water conservation measures that Utilities Department Staff have identified as practical for staff to implement and administer as stand-alone work efforts, and do not include all possible water conservation measures. The water conservation measures included in Plan B are a subset of Plan A, and the water conservation measures in Plan C are a subset of Plan B. All of the conservation program plans assume an initial 2-year period of rebate implementation for larger water conservation measures such as turf replacement and clothes washers, followed by an annual implementation of other water conservation measures such as SFR home water reports, MFR water use audits, and showerhead replacement rebates.

Plan A

Conservation program Plan A is a large, comprehensive conservation program that consists of 29 water conservation measures. Utilities Department staff selected water conservation measures that staff would be able to implement and administer as stand-alone work efforts; therefore, implementation of the Plan in its entirety would be impractical for the existing staff and under the existing budget. Plan A serves to provide an upper threshold for water savings and program costs in comparison to subsequent, more targeted conservation program plans. Plan A also serves to estimate the benefit-cost ratios for a large suite of water conservation measures. These benefit-cost ratios were the basis for determining which water conservation measures should be included in subsequent conservation program plans.

Plan B

Conservation program Plan B consists of the water conservation measures from Plan A with the greatest benefit-cost ratios. There are 16 water conservation measures included in Plan B. Traditional water conservation measures including turf replacement rebates, graywater rebates, rain barrel rebates, and clothes washer rebates were determined to have a low benefit-cost ratio in Plan A and were therefore excluded from Plan B. As such, a comparison of benefits and costs between Plan A and Plan B illustrates the value of implementing water conservation measures with high benefit-costs ratios. Plan B represents a conservation program plan that could be implemented and administered with a substantial increase in staff, funding, and resources.

Plan C

Conservation program Plan C utilized the information gained from Plan A and Plan B, as well as results from a community-wide survey of local businesses, to develop an informed conservation program that implements high benefit-cost ratio measures within a budget that is representative of the Utilities Department's existing budget. There are 12 conservation measures included in Plan C.

The survey, completed by 240 San Luis Obispo business owners and managers in the fall of 2022, found that over half of those that responded (53.96%) were most interested in a rebate for WaterSense® high-efficiency toilets. This is believed to be in part because 26% of the respondents (62 individuals) identified themselves as operating a real estate or property management business and toilets were the primary water conservation measure that would apply to this type of business. The interest for all items included in the survey are summarized in **Error! Reference source not found.** Additional water conservation measures participants listed as being of interest included: trees for shading, rainwater retention, compressed air for removing food residue, AMI and leak detection technologies, rain barrels, pipe replacement, landscape/turf conversions, native plants, promotion of low-water use businesses such as retail, rate increases,

and high-efficiency reverse osmosis systems. Ultimately the quantity of those that expressed interested in items identified as having a high benefit-cost ratio were utilized to estimate the quantities of the water conservation measures modeled in Plan C.

Table 6. Results of the 2022 Survey of Businesses' Interests in Water Conservation Measures.

Conservation Measure	Yes	No	Yes, If Increased[1]
ConserveWell® Dipper Well	3.23% (7)	93.09% (202)	3.69% (8)
WaterSense High-Efficiency Toilet	35.12% (72)	52.20% (107)	12.68% (26)
Waterless or High-Efficiency Urinal	10.10% (20)	86.36% (171)	3.54% (7)
Commercial Clothes Washer	15.10% (29)	78.13% (150)	6.77% (13)
Commercial Dish Waster	13.76% (26)	82.54% (156)	3.70% (7)
Waterbroom	10.99% (20)	85.16% (155)	3.85% (7)
Kitchen Spray Rinse Valve (complimentary)	22.10% (40)	77.90% (141)	N/A

[1]"Yes, If Increased" was used for the respondent to advise of the dollar amount needed for them to be interested in a rebate for the item.

Quantities and costs identified for Plan C were also determined with the goal of ensuring that the program does not favor one customer class over another, in contrast to the way in which water conservation programs that focus on turf replacement favor single-family homeowners. Therefore, the $60,000 budget for water conservation rebates was divided evenly between seven water conservation measures not currently offered by the Utilities Department for SFR, MFR, and CII categories. $10,000 was also set aside for developing water budgets for large landscapes on CII properties. The quantities included for each water conservation measure of Plan C represents a conservation program plan that could be implemented with current staffing levels, funding, resources, and expected community participation based on the results of the survey (Table 6). Table 7 outlines the quantity and budgeted dollar amount for each water conservation measure included for Plan C during Year 1 and Year 2.

Table 7. Quantity and Budget Allocated for Water Conservation Plan C.

Conservation Measure[1]	Year 1	Year 2
SFR High-Efficiency Toilet (1.28 GPF)	100 ($10,000)	100 ($10,000)
MFR High Efficiency Toilet (1.28 GPF)	44 ($4,400)	44 ($4,400)
MFR Large Landscape Smart Irrigation Controller	8 ($5,600)	8 ($5,600)
CII High-Efficiency Toilet (1.28 GPF)	70 ($7,000)	70 ($7,000)
CII High-Efficiency Urinal (0.125 GPF)	20 ($2,000)	19 ($1,900)
CII Restaurant Dipper Wells	7 ($1,050)	7 ($1,050)
CII Large Landscape Water Budgets	20 ($5,000)	20 ($5,000)

[1]Water conservation measures that were modeled but are already a part of the Utilities Department's standard water conservation operations (water reports, audits, and complimentary items) are not included.

Results of Benefit-Cost Analysis

The AWE Tracker Tool provides a benefit-cost ratio for each water conservation measure in units of dollar per AF of water saved. Water conservation measures with low benefit-cost ratios provide lower water savings per dollar than the water conservation measures with high benefit-cost ratios. As stated earlier, the development of Plan A included a large suite of water conservation measures and serves to compare the benefit-cost ratios of those measures. The list of benefit-cost ratios for all water conservation measures included in Plan A is provided in the Appendix. Conservation programs Plan B and C included measures that had a benefit-cost ratio greater than the median determined in Program A (29.7) as well as CII large landscape water budgets. Although CII large landscape water budgets were determined to have a benefit-cost ratio lower than the median (16.9), the water conservation measure was included in Plans B and C due to the Utilities Department's interested in determining water budgets for meeting forthcoming State regulations regarding large CII landscapes.

Measures that are utilized daily, such as toilets, urinals, and showerheads, provide the highest benefit-cost ratio. While water conservation measures that would be utilized infrequently, such as rain barrels and graywater laundry to landscape systems, are some of the lowest benefit-cost ratios. Turf replacement is also among the lowest benefit-cost ratio due to the high expense of replacing each square foot. For this simulation, $1.00 per square foot with a maximum of 5,000 square feet available for replacement was utilized. Lastly, when comparing the expected savings in gallons per day per unit to the benefit-cost ratio, MFR large landscape smart irrigation controller and CII large landscape water budgets stand out as having the potential to produce a large water savings but have a low benefit-cost ratio due to the high expense. Rebates for restaurant dipper wells and commercial kitchen dishwashers also show a high expected savings compared to other water conservation measures.

Water Savings and Cost Evaluation

The AWE Conservation Tracker Tool allows users to identify program cost parameters for each water conservation measure, including the cost to the utility, any costs covered by a program partner, and the cost to the program participant. For this analysis only the cost to the utility was utilized as official offers from program partners have not been established and the cost to the program participant is assumed to vary based on the specific device the participant choses to purchase. The cost to the utility for each water conservation measure was determined based on the recommended cost provided by AWE and the estimated maximum amount that the City would provide, which was roughly half of the average cost for each measure.

Figure 7 shows the estimated water savings, total program costs, and per acre-foot cost of the three water conservation programs that were evaluated. If all water conservation measures in Plan A were implemented and utilized, a demand reduction of 1,814 AF is estimated over the eighteen-year model period; however, it would cost the Utilities Department $341,646 with the bulk of the total program costs occurs in the first two years due to implementation of rebate programs. This equates to a cost of about $188 per AF of demand reduction. Demand reduction is predicted to initially increase following the implementation of the rebate water conservation measures and then remains relatively consistent for several years until decreasing as the plumbing fixtures age and become less efficient, and the effects of the rebates diminish.

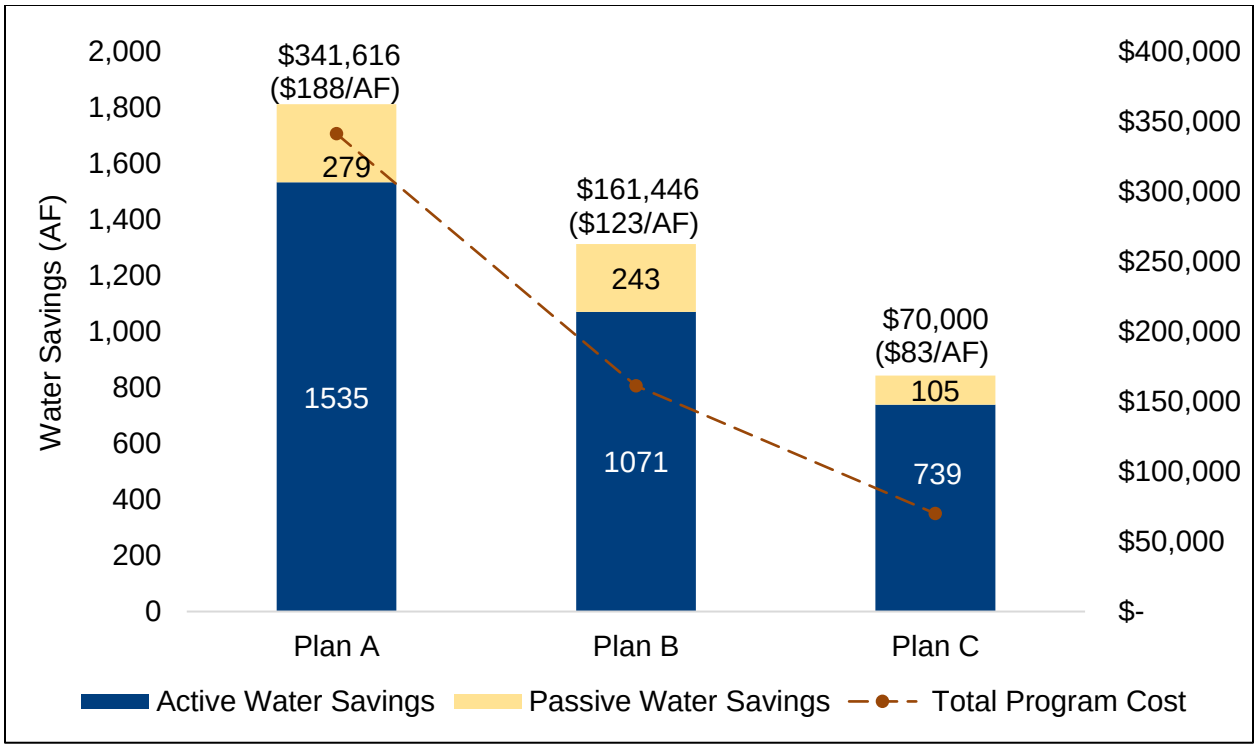
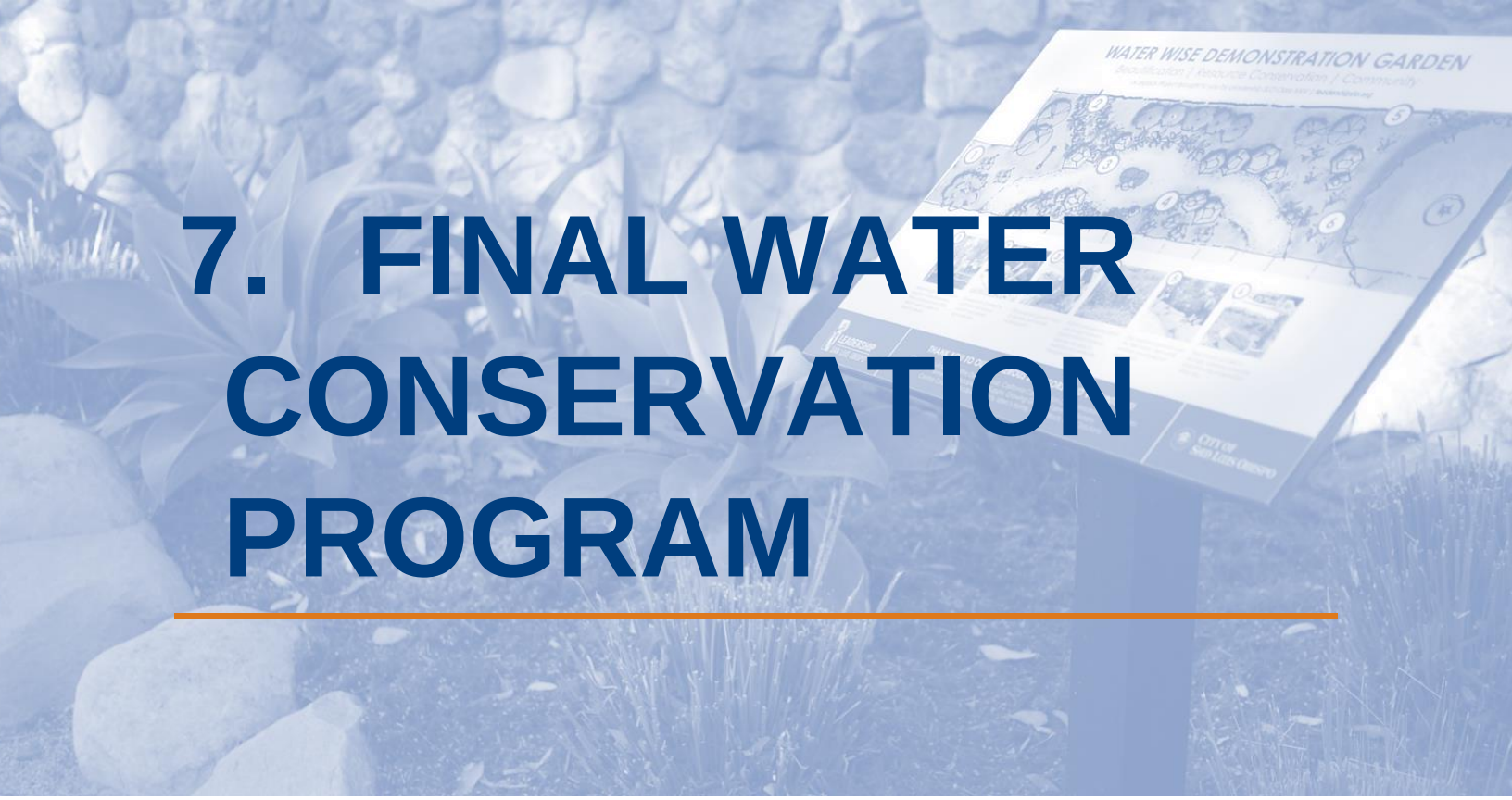


Figure 7. Estimated Water Savings and Program Costs for Water Conservation Plans A-C.

If only the water conservation measures with a high benefit-cost ratio identified in Plan B were implemented and utilized, it is estimated that the City would experience 72% of the demand reduction estimated in Program A (1,314 AF), while decreasing program costs by 56% during the first two years (a $180,200 savings). The cost per acre-foot of demand reduction for Plan B is about $123.

Lastly, with a constrained budget of $60,000 for rebate programs and $10,000 for developing large landscape water budgets on CII properties, as identified in Plan C, it is estimated that the City would experience 47% of the demand reduction estimated in Plan A (844 AF), while decreasing program costs during the first two years by 78% (a $253,700 savings)**Error! Reference source not found.**. The cost per acre-foot of demand reduction for Plan C is the lowest of the three plans used in this evaluation, with a value of about $83.



7. FINAL WATER CONSERVATION PROGRAM

Selection Criteria

The development of this Water Conservation Plan utilized the AWWA Manual of Water Supply Practices, M52 – Water Conservation Programs – A Planning Manual. Internally, the City identified four goals of the water conservation rebate program, which carry over to the entire water conservation program. These goals are:

- Support a community that already conserves water.
- Increase conservation among CII properties.
- Maximize water savings with available resources.
- Create a plan that is equitable across all user groups.

When a community has largely embraced water conservation as a way of life, such as San Luis Obispo, it is important to support the programming that has provided that success and to avoid demand hardening. As such, several of the water conservation measures included in the City's final water conservation plan are continuations of previous measures, such as communication, outreach, education, and home water reports. Given that 69% of the City's water use is attributed to residential water use, historical water conservation programs have focused heavily on providing water devices and rebates to residential customers.

Description of Program Components

Continued Programming

The City will continue the operational, external, and regulatory programs outlined in Section 4 of this plan. By leveraging the knowledge gained from the implementation of these programs over the years, these programs can become more refined, targeted, and impactful.

New Measures Selected

The City has implemented (as of January 1, 2023) the water conservation measures from Plan C, described in Section 6 of this report. This includes rebates for the following:

- Single-Family Residential High-Efficiency Toilets
- Multi-Family Residential High-Efficiency Toilets
- Multi-Family Residential Large Landscape Smart Irrigation Controllers
- Commercial, Industrial, and Institutional High-Efficiency Toilets
- Commercial, Industrial, and Institutional High-Efficiency Urinals
- Restaurant Dipper Wells

Staff are in the process of updating and developing water budgets for City parks and recycled water sites. A third party will be hired to develop additional water budgets for select CII properties that have a DIM. These budgets will allow city staff to identify customers that are over budget and offer assistance to help lower their water use by improving irrigation system performance and management. Understanding if a property is exceeding a water budget will help ensure efficient water use and that the City remain in compliance with the supplier level requirements for the State's CII Standard and Performance Measure requirements.

Future Options

Following regularly scheduled evaluations of the water conservation program, the City may implement water conservation measures included in Plan B in addition to, or in place of, the water conservation measures included in Plan C. Existing water conservation measures will be evaluated for community participation and water savings to determine if changes to the program are necessary. Changes will be made based on the information gathered during the conservation plan development detailed in Section 6 of this report and available City resources. The City is also developing programs and processes that should result in water conservation, in addition to water conservation measures, some of which are described below.

The City of San Luis Obispo is in the process of converting its water meters from mechanical meters to ultrasonic digital meters that will be compatible with AMI. AMI enables two-way communication between water providers and consumers for monitoring and managing water usage. The benefits of AMI include real-time monitoring, leak detection, demand management, and customer engagement which can improve operational efficiency, conserve water, and enhance customer service. The movement towards AMI citywide will require a significant work effort from the City, including replacing all existing mechanical meters, installation of cellular hardware, establishing a reliable communication network and robust data management system, and educating customers regarding the transition. AMI-compatible water meters provide many benefits, even if the system is not converted to an AMI system.

City staff are also currently participating in the AWE learning cohort on cooling towers. The goal of this program is to bring together water utilities across the nation to discuss rebates or regulatory requirements that encourage efficient water use for cooling towers. The City is in the process of evaluating if an incentive or regulatory based cooling tower water conservation measure could be implemented depending on projected water savings, funding, and staff availability.

The City is developing a strategy to update its method for estimating water supply and demand using land use-based demand projections instead of the current method which uses population and the SB X7-7 water use target. This method will mirror the methods used by the California Department of Water Resources in determining UWUOs.

Projected Water Savings

Table 8 shows the projected per capita water use in AF in 5-year increments for the projected demand with no plumbing code savings, projected demand with plumbing code savings, and projected demand with plumbing code savings and the recommended program implementation. It should be noted that not all of the water conservation measures, such as public outreach, educational programs, and water waste regulations, could be quantified to be included in the model. Furthermore, these estimates assume that the quantity of the measure is fully utilized (i.e. the anticipated number of rebates are fully utilized by the community).

Table 8. Projected Water Demands.

	2025	2030	2035	2040
Population	51,317	53,934	57,200	60,118
"Baseline" Demand without Plumbing Code (acre-feet)	5,213	5,638	6,092	6,578
Demand with Plumbing and Landscape Standards (acre-feet)	4,922	5,128	5,372	5,665
Demand with Plumbing and Landscape Standards and Recommended Program Plan C (acre-feet)	4,883	5,093	5,360	5,660

Additional Benefits

Water conservation programs provide benefits ancillary to water savings and prolonging water supplies. Water conservation programs are instrumental in helping water utilities meet water use objective and leak reduction compliance goals, which are paramount in California. Reducing per capita water use alleviates the need for expanded water supplies or water treatment and distribution infrastructure, which results in deferred infrastructure upgrades. Also, reducing water use is directly related to decreased energy consumption, which reduces greenhouse gas emissions and can also reduce energy costs for the utility and the water customers.

Regulatory Compliance

Although the City is currently below the SB X7-7 required 117 GPCD, implementation of the Water Conservation and Efficiency Plan will ensure that total GPCD remains low as population continues to increase. Additionally, various measurable objectives outlined in Conclusion of this plan are requirements of SB 606 and AB 1668 regardless of whether annual water use is below the calculated Urban Water Use Objectives (UWUO)[38]. Periodic reviews and updates will ensure that

[38] The California Urban Water Use Objectives are calculated following California Water Code §10609.20, which can be accessed at:
https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=10609.24.&lawCode=WAT

the Water Conservation and Efficiency Plan remains current with the most up-to-date regulatory requirements and industry best practices, which will help the City to maintain its compliance with relevant water conservation regulations. Ultimately, the implementation of the Water Conservation and Efficiency plan is a proactive approach to ensure that the City meets its regulatory obligations, even as population increases and weather becomes more unpredictable.

Leak Reduction

In addition to a reduction in overall water usage, implementation of the Water Use and Efficiency Plan will also lead to water savings through a reduction in water leaks. Water leaks result in wasteful energy and financial resources. Not only does water that is lost because of a leak require additional energy to pump and treat the lost water, but water leaks can also cause costly damage to infrastructure. On an individual level, customers face high bills and potential structural damage and mold growth. For the City, small leaks will eventually turn into larger leaks, such as main line breaks in the distribution system, that require extensive financial resources such as staff time and materials. Larger breaks may also disrupt water pressure, thus affecting the efficiency and effectiveness of the overall supply. Measures that specifically focus on leak detection and repair, such as AMI, will help to ensure that any leaks in the system are promptly identified and fixed. Moreover, by raising awareness about the importance of water conservation among the community, the plan encourages individuals to adopt water-saving behaviors, such as addressing leaks as soon as they are identified. Through these efforts, the City can significantly reduce overall water system leakage both internally and externally throughout the community.

Deferred Infrastructure Upgrades

Implementation of the Water Conservation and Efficiency Plan can also significantly contribute to deferring infrastructure upgrades related to water supply acquisition, treatment, and distribution. By reducing water demand through water conservation measures, the need to construct additional water supply sources or expand existing treatment facilities is reduced. This can result in considerable cost savings and a reduction in carbon emissions, energy use, and environmental impacts associated with the construction of new facilities. Therefore, the implementation of the Water Conservation and Efficiency Plan can be an effective strategy for the City to manage its water resources sustainably while minimizing the need for costly and potentially disruptive infrastructure upgrades.

Greenhouse Gas Reductions

Water conservation and efficiency also often have ancillary benefits of reductions in energy use and greenhouse gas (GHG) emissions associated with water supply, treatment, and use. GHG emissions are released during water supply pumping, treatment, and distribution, the treatment of wastewater, and if there is any energy associated with the operation of appliances and equipment that require water for end-users. By reducing water demand through water conservation, the City can reduce the energy required for water pumping and treatment and the community can reduce the energy required for use, thus resulting in a decrease in GHG emissions. Additionally, by deferring infrastructure updates, GHG emissions related with construction and maintenance activities such as the use of heavy equipment can be avoided.

The City of San Luis Obispo established a community-wide goal to reduce community greenhouse gas emissions to reach carbon neutrality by 2035. The City has established a culture of using resources mor effectively and strive to improve community equity and well-being.

For the estimated amount of water saved through the implementation of this plan, there is an estimated embedded energy intensity savings of 2,177 kilowatt-hours per acre-foot (kWh/AF). By multiplying the water savings times the energy intensity and a GHG emission factor estimated by PG&E this converts to an estimated 2,106 pounds of carbon dioxide (CO_2) equivalent per AF. It should be noted that emission factors are estimated based on the California Public Utilities Commission calculator and that additional GHG savings from hot water savings at the end user level and from reduced wastewater collection, treatment, and disposal energy are not quantified. Total projected annual CO_2 equivalent savings for each year are estimate in Table 9.

Table 9. Estimated CO2 Savings from Implementation of the Selected Water Conservation Program.

Year	Cumulative Tons of CO2 Equivalent Savings
2025	2,581
2030	8,582
2035	17,004
2040	27,515

Next Steps

Annual monitoring and reporting of the City's water supply status will continue, and updates to the City's UWMP and WSCP will continue on a five-year cycle. The City understands that water use is dynamic and responds to changes in population, economy, weather, regulations, and technology. Therefore, the City may adjust water conservation targets and schedules as needed. This may include expanding or scaling back various water conservation measures to meet budget and staffing restrictions, increase efficiency, or adopt new technologies or better methods. With the calculated water savings identified for various water conservation measures in this plan, the City will be able to adjust program components to strive to meet the measurable objectives discussed below.

Implementation Schedule

The Water Conservation and Efficiency Plan will act as a road map, outlining anticipated new water conservation measures until 2040. Table A6 in the Appendix of this report shows the implementation schedule for the planned conservation measures. However, the implementation schedule will remain adaptable over time, as it is subject to modifications based on changes in budget and staffing resources. The determination of specific measures will be guided by key questions, including but not limited to:

- What level of support will be required from conservation staff to implement and maintain the selected water conservation measures?
- What other support is needed (e.g. outsourced support or other sources of funding) or wanted to implement and maintain these programs?
- Does the conservation measure meet other Departmental objectives?
- How quickly can the conservation measure be implemented?

It should be noted that although new water conservation measures may be implemented on schedule, high participation rates will be crucial to achieving the estimated demand reduction and measurable objectives outlined below. Therefore, the following benchmarks will be used to help gauge progress and determine the effectiveness of the individual measures that are implemented.

Measurable Objectives

Baseline Water Usage and Water Use Efficiency Standards
Baseline water use will serve as a reference point for measuring future reductions and efficiency improvements. Water use efficiency standards set by the State, or locally, will define the upper limit of water use targeted by the City's water conservation program. A water conservation program that results in water use below these standards will be considered a success.

Participation Rates
Staff will track the number of items offered and level of participation from individuals, households, community groups, and businesses for water conservation measures that are implemented. This will include the number of:

- Rebates approved
- Tours provided
- Youth education classes offered
- Plans reviewed for conformance with MWELO requirements
- Complimentary water conservation items provided
- Technical assistance visits conducted
- Water waste violations investigated
- Plumbing retrofit certifications approved

Cost Per AF Saved
Staff will monitor water use for program participants that can be tracked, such as rebate programs, to determine the cost to the Utilities Department per acre-foot of water saved.

These benchmarking metrics will then be used during the performance tracking and review process to modify the overall program and improve future processes and procedures.

Budget and Staffing

In recent years, water agencies have recognized the value of water conservation as an essential component of their water supply portfolio. Conserving water not only reduces the need for additional water extraction, treatment, and distribution, but also mitigates the necessity for securing extra water sources to meet future demands and buffer supplies. The estimated cost of water saved per unit volume ($/AF) for the Final Water Conservation measures outlined in this plan is $83/AF. This cost is lower than the average expense of obtaining, treating, and distributing water from the City's three surface water reservoirs, which is currently estimated to be about $276/AF.[39] Consequently, water conservation serves as a cost-effective solution when considering the expenses of future water supplies.

The budget for the City's Water Conservation Program may vary, particularly during drought periods. For instance, additional funds were allocated in the City's 2022-23 Budget Supplement to support increased public outreach, hire additional support staff, and launch a new water conservation rebate program, all in response to the drought. Therefore, staff will use the Water Conservation and Efficiency Plan as a roadmap to implement water conservation measures that

[39] This is the variable production cost estimated in the City's 2021 Water Loss Audit. This is the cost to produce and supply the next unit of water and can include both short-run and long-run marginal costs.

have the potential to create the largest water savings while aligning with the City's current financial or mid-year financial plan. Staff will also aim to actively seek partnerships and apply for grants that maximize support for water conservation measures as staffing and resources allow.

Performance Tracking and Review

The use of measurable objectives will help clearly identify the overall progress and performance of the City's Water Conservation and Efficiency Plan. Staff will track the participation and effectiveness of individual water conservation measures through the benchmarks identified above and the overall performance of the plan through the following measurable objectives listed below. Measurable objectives were chosen based on historical tracking and current and anticipated future regulatory compliance metrics.

- Meet the City's UWMP GPCD target and current state GPCD regulations annually.
- Meet the state's requirements for outdoor residential landscape standards annually.
- Meet the state's water loss standards in gallons per connection per day annually.
- Document increased water use efficiency for CII DIMs.
- Document increased water use efficiency for the highest 20% water-users for each classification of CII properties (excluding process water use).
- Document increased water use efficiency for the top 5% of individual CII accounts (excluding process water use).

After compiling the measurable objectives, staff will conduct a comprehensive review and analysis to determine the extent to which these objectives were met or fell short. This evaluation will enable the staff to identify programs or customer groups that may require additional resources, staff allocation, or funding to ensure the ongoing fulfillment of the community's Water Conservation and Efficiency Plans goals. Furthermore, these reviews will serve as an opportunity to incorporate new ideas and regulatory requirements, thereby ensuring that the City not only complies with but also surpasses water conservation regulations. The findings of these reviews and potential updates will be provided in the City's annual Water Supply and Demand Assessment and five-year UWMP in accordance with the policies and procedures identified in the City's General Plan WWME. The Water Conservation and Efficiency Plan will be reviewed and updated at least once every five years.

8. CONCLUSION

The City's Water Conservation and Efficiency Plan uses the latest tools and information to develop a conservation plan that builds on the City's history of building a strong water conservation ethic. This plan aims to proactively meet State mandated water use efficiency standards using an equitable, budget-conscious approach. Development of the latest water conservation program has provided information that will be used to modify future water conservation programs as needed, to maximize community participation and water savings.

The following is a summary of the key findings of this plan. These key findings demonstrate the City's commitment to strategic and sustainable water management practices that will help ensure the City of San Luis Obispo continues to have a resilient water future.

Water Savings and Ancillary Benefits
The water conservation program developed as part of this Water Conservation and Efficiency Plan is estimated to save as much as 844 AF/Year. This water remains in the City's available water supplies to provide for future demand, or as Reliability Reserve or Secondary Water Supply. Additional benefits to implementing this water conservation program include regulatory compliance, leak reduction, deferred infrastructure upgrades, and reducing greenhouse gasses and energy costs.

Enhanced Understanding
The utilization of emerging tools for the development of this plan has provided the City with a deeper understanding of water demand and the potential impact of water conservation measures on future water conservation efforts. Implementation of the Water Conservation and Efficiency Plan will allow the City to continue to integrate innovative techniques and tools into the community's water conservation practices moving forward.

Integral Role of Conservation
Water conservation has played a crucial role in the City's water supply planning and has allowed the City to ensure the fulfillment of foreseen and unforeseen water demands and regulatory obligations. Water conservation preserves available water supplies for unforeseen short-term demands and preserves stored water resources to be used during future droughts. The

measurable objectives in this plan will align the City with that State's "Making Water Conservation a California Way of Life" legislation (SB 606 and AB 1668). Therefore, the City will be able to utilize the Water Conservation and Efficiency Plan to fulfill its compliance obligations to meet regulatory requirements as these and other new water conservation regulations are put in place by the state and federal governments.

Cost-Effectiveness

Conservation is recognized as one of the most cost-effective strategies for meeting current and future water needs. The implementation of the water conservation measures identified in this plan has the potential to reduce the necessity for further infrastructure upgrades and expansion. Additionally, the ability of the Conservation Tracker Tool to provide estimates of benefit-cost ratios of conservation measures allows the City to implement a cost-effective water conservation program.

Proactive Management

The Water Conservation and Efficiency Plan aligns with the City's approach to actively managing water supply to meet both current and future demands under various climate scenarios, helping to ensure long-term water sustainability. The plan provides metrics that can be used to estimate future water savings and to measure the effectiveness of the water conservation program. Should the program not meet the City's goals, the plan provides alternative pathways that can be utilized to help improve program effectiveness. Coupled with the tools the City has historically used to proactively manage its water resources, the Water Conservation and Efficiency Plan adds another layer to the City's informed decision making.

9. APPENDIX

Table A 1. Commercial, Industrial, and Institutional (CII) Water Account Classifications

Class Code	Class Code Definition
Airport	This includes all meters that service the San Luis Obispo County Regional Airport.
Auto Services	This includes all meters that service commercial automobile services, including mechanics, detailing services, gas stations, motor vehicle sales, towing services, and vehicle rentals. Please note that this does not include meters that service car wash facilities.
Car Wash	This includes all meters that service the various types of car washes: self-service, automated, hand wash, etc. Gas stations that include car washes should be categorized as "Auto Services".
Cemetery	This includes all meters that service areas with graves, tombs, and funeral urns.
City Facility	This includes all meters that service City of SLO buildings and facilities that are **not** associated with City of SLO parks (i.e. City Hall, 879 Morro, etc.)
City Park Facility	This includes all meters that service City of SLO park facilities (i.e. park restrooms, park water fountains, etc.).
Convenience Store	This includes all meters that service convenience stores, including liquor stores.
Entertainment with Food	This includes all meters that service entertainment facilities that provide customers food services (i.e. theaters and bowling allies).
Entertainment without Food	This includes all meters that service entertainment facilities that do not offer customers food services (i.e. museums).
Food and Beverage	This includes all meters that service full-service restaurants, bars, fast food eateries, catering services, service bakeries, cafes, and coffee shops.
Grocery Store	This includes all meters that service grocery stores and supermarkets.
Group Live-in	This includes all meters that service facilities providing rehabilitation services, such as housing and drug and alcohol rehabilitation.
Health Care	This includes all meters that service public and private hospital facilities, private medical centers, doctors' offices, labs, and long-term nursing homes: institutions equipped to care for people unable to look after themselves, as the aged or chronically ill. Please note that there is a separate category for retirement homes.
Hotel/Motel	This includes all meters that service properties identified by the downtown association to be a hotel or motel.
Industrial	This includes all meters that service industrial facilities, including manufacturing and warehousing facilities.
Laundry Facility	This includes all meters that service commercial laundry services and dry-cleaning facilities. Please note that there is a separate category for residential laundry facilities.

Misc Commercial	This includes all meters that service commercial facilities that do not fall into any of the commercial categories identified above.
Office	This includes all meters that service office buildings.
Other Public Facility	This includes all meters that service public institutional facilities not owned by the City of SLO (i.e. County/State/Federal administrative offices, post offices, public use buildings, etc.)
Pool	This includes all meters that service community pools.
Preschool/Daycare	This includes all meters that service commercial and non-profit childcare services. Religious institutions that include child services should still be listed as religious buildings if there is only one meter.
School	This includes all meters that service public and private primary and secondary educational institutions. Please note that there is a separate category for Cal Poly meters under the Other category.
Religious Building	This includes all meters that service religious facilities.
Residential Laundry	This includes all meters that service only laundry facilities on residential properties (i.e. non-commercial).
Retirement Home	This includes all meters that service retirement facilities: institutions equipped to care for people who are independent but want to be able to access care and support if they need it. Please note nursing homes fall under the Health Care class code.
Sales/Services	This includes all meters that service retail and service stores, commercial shopping centers, commercial personal service facilities (such as beauty salons, massage facilities, and fitness/recreational facilities), or business centers that include a variety of commercial businesses.
Utility	This includes all meters that service non-City run utility facilities (i.e. gas, electric, etc.)

Table A 2. Plan A Water Conservation Measure Parameters.

Water Conservation Measure	Cost to Utility ($/Unit)	Quantity Year 1	Quantity Year 2	Quantity (Annual Thereafter)
SFR Home Water Report	$0.00*	250	250	250
SFR ULFT Replacement (1.6 GPF)	$100.00	100	100	-
SFR HET Replacement (1.28 GPF)	$100.00	100	100	-
SFR Washer Rebate (WF <=4)	$150.00	40	40	-
SFR Showerhead Replacement (<= 1.8 GPM)	$6.00**	50	50	50
SFR Smart Irrigation Controller Rebate	$130.00	20	20	-
SFR Turf Replacement	$1.00/sq ft	5000	5000	-
SFR Graywater Laundry to Landscape Rebate	$200.00	10	10	-
SFR Rain Barrel (< 200 gal) Rebate	$50.00	20	20	-
MFR Water Use Audit	$0.00*	250	250	250
MFR ULFT Replacement (1.6 GPF)	$100.00	100	100	-
MFR HET Replacement (1.28 GPF)	$100.00	100	100	-
MFR In-Unit Washer Rebate (WF <=4)	$150.00	100	100	-
MFR Shared Washer Rebate (WF <=4)	$350.00	20	20	-
MFR Showerhead Replacement (<= 1.8 GPM)	$6.00**	10	10	10
MFR Large Landscape Smart Irrigation Controller Rebate	$700.00	12	12	-
MFR Turf Replacement	$1.00/sq ft	5000	5000	-
CII ULFT Replacement (1.6 GPF)	$100.00	100	100	-
CII HET Replacement (1.28 GPF)	$100.00	100	100	-
CII Urinal (Waterless) Replacement	$100.00	12	12	-
CII Urinal (1/8 GPF) Replacement	$100.00	12	12	-
CII Washer Rebate (WF <=4)	$350.00	14	14	-
CII Commercial Kitchen Dishwasher Rebate	$700.00	7	7	-
CII Commercial Kitchen Spray Rinse Valve Rebate	$31.85**	20	20	20
CII Commercial Kitchen Food Streamer Rebate	$1,400.00	7	7	-
CII Restaurant Dipper Well Rebate	$150.00	7	7	-
CII Large Landscape Irrigation Controller	$1400.00	12	12	-
CII Large Landscape Turf Replacement	$1.00/sq ft	5000	5000	-
CII Large Landscape Water Budget	$250.00	20	20	-

*SFR Home Water Report and MFR Water Use Audits set to $0.00 because this is a standard service that Water Resources staff provides the community.

**SFR/MFR showerheads and CII Kitchen Spray Rinse Valves are kept at their true cost in Program 1 to compare to other measures.

Table A 3. Benefit-Cost Ratio for Conservation Measures Included in Plan A.

Water Conservation Measure	Benefit-Cost Ratio
SFR Rain Barrel (< 200 gal) Rebate	0.6
SFR Graywater Laundry to Landscape Rebate	2.1
MFR Turf Replacement	3.7
CII Large Landscape Turf Replacement	3.7
SFR Turf Replacement	3.7
SFR Smart Irrigation Controller Rebate	7.6
MFR In-Unit Washer Rebate (WF <=4)	8.3
CII Commercial Kitchen Food Steamer Rebate	10.0
SFR Washer Rebate (WF <=4)	12.4
MFR Shared Washer Rebate (WF <=4)	16.5
CII Washer Rebate (WF <=4)	16.5
CII Large Landscape Water Budget	16.9
CII Large Landscape Irrigation Controller	19.7
SFR ULFT Replacement (1.6 GPF)	29.5
CII Commercial Kitchen Dishwasher Rebate	29.7
CII Commercial Kitchen Spray Rinse Valve Rebate	39.6
CII ULFT Replacement (1.6 GPF)	41.1
MFR ULFT Replacement (1.6 GPF)	42.6
MFR Large Landscape Smart Irrigation Controller Rebate	62.8
SFR Home Water Report	100.0
MFR Water Use Audit	100.0
SFR HET Replacement (1.28 GPF)	105.3
CII Restaurant Dipper Well Rebate	109.2
CII Urinal (1/8 gpf) Replacement	116.6
MFR HET Replacement (1.28 GPF)	117.0
CII Urinal (Waterless) Replacement	126.2
CII HET Replacement (1.28 GPF)	146.5
MFR Showerhead Replacement (<= 1.8 GPM)	175.9
SFR Showerhead Replacement (<= 1.8 GPM)	175.9

	Active	Passive
Year 1	85	3
Year 2	139	6
Year 3	114	8
Year 4	115	9
Year 5	116	10
Year 6	115	11
Year 7	114	13
Year 8	114	14
Year 9	109	15
Year 10	104	16
Year 11	77	18
Year 12	51	19
Year 13	50	20
Year 14	50	21
Year 15	49	22
Year 16	46	23
Year 17	44	25
Year 18	43	26
Total	**1,535**	**279**

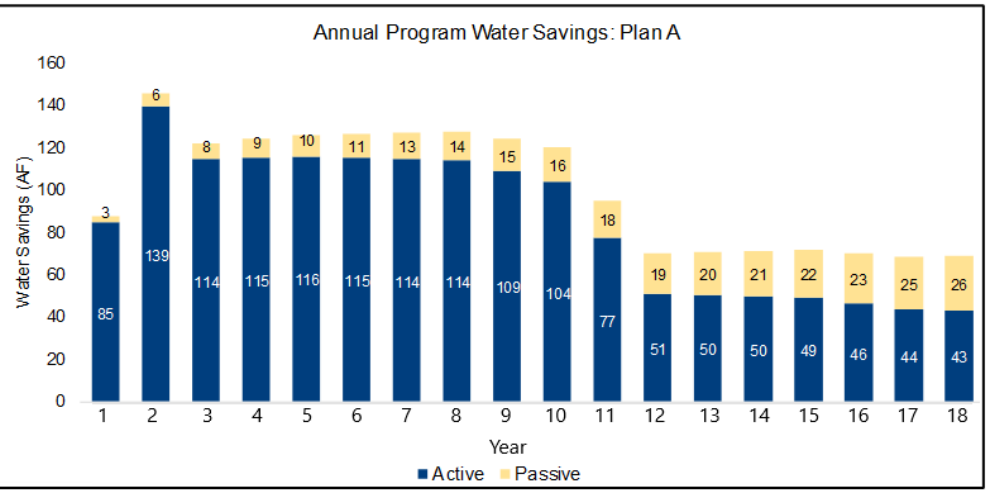


Figure A 1. Plan A Annual Program Water Savings.

Table A 4. Plan B Water Conservation Measure Parameters.

Water Conservation Measure	Utility ($/Unit)	Quantity Year 1	Quantity Year 2	Quantity (Annual Thereafter)
SFR Home Water Report	$0.00*	250	250	250
SFR HET Replacement (1.28 GPF)	$100.00	100	100	-
SFR Showerhead Replacement (<= 1.8 GPM)	$6.00**	50	50	50
MFR Water Use Audit	$0.00*	250	250	250
MFR HET Replacement (1.28 GPF)	$100.00	100	100	-
MFR ULFT Replacement (1.6 GPF)	$100.00	100	100	-
MFR Showerhead Replacement (<= 1.8 GPM)	$6.00**	10	10	10
MFR Large Landscape Smart Irrigation Controller Rebate	$700.00	12	12	-
CII HET Replacement (1.28 GPF)	$100.00	100	100	-
CII ULFT Replacement (1.6 GPF)	$100.00	100	100	-
CII Urinal (1/8 GPF) Replacement	$100.00	12	12	-
CII Urinal (Waterless) Replacement	$100.00	12	12	-
CII Commercial Kitchen Dishwasher Rebate	$700.00	7	7	-
CII Commercial Kitchen Spray Rinse Valve Rebate	$31.85**	20	20	20
CII Restaurant Dipper Well Rebate	$150.00	7	7	-
CII Large Landscape Water Budget	$250.00	20	20	-

*SFR Home Water Report and MFR Water Use Audits set to $0.00 because this is a standard service that Water Resources staff provides the community.
**SFR/MFR showerheads and CII Kitchen Spray Rinse Valves are kept at their true cost in Program 2 to compare to other measures. However, these measures would fall under the standard $5,000 annual complimentary water conservation item budget.

	Active	Passive
Year 1	62	2
Year 2	94	5
Year 3	70	6
Year 4	71	7
Year 5	71	9
Year 6	71	10
Year 7	70	11
Year 8	70	12
Year 9	69	13
Year 10	69	14
Year 11	56	15
Year 12	44	17
Year 13	43	18
Year 14	43	19
Year 15	43	20
Year 16	42	21
Year 17	42	22
Year 18	41	23
Total	**1,071**	**243**

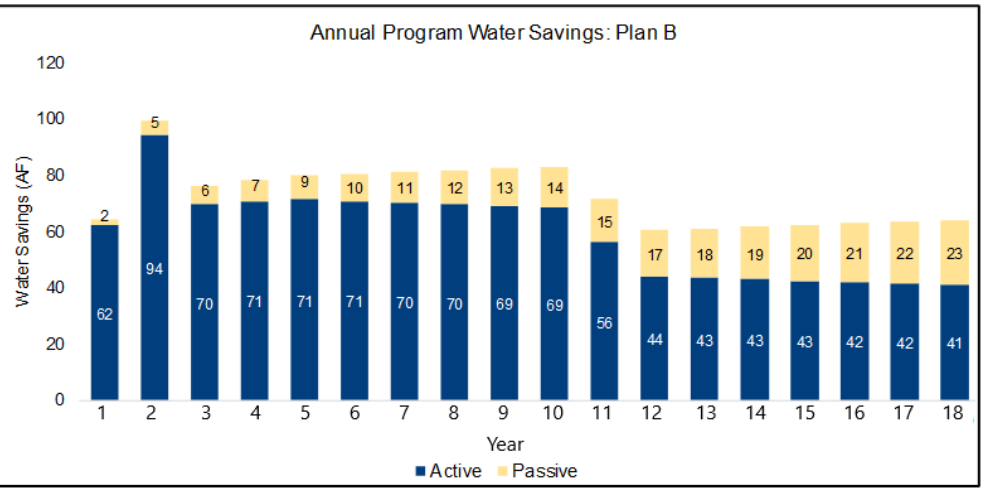


Figure A 2. Plan B Annual Program Water Savings.

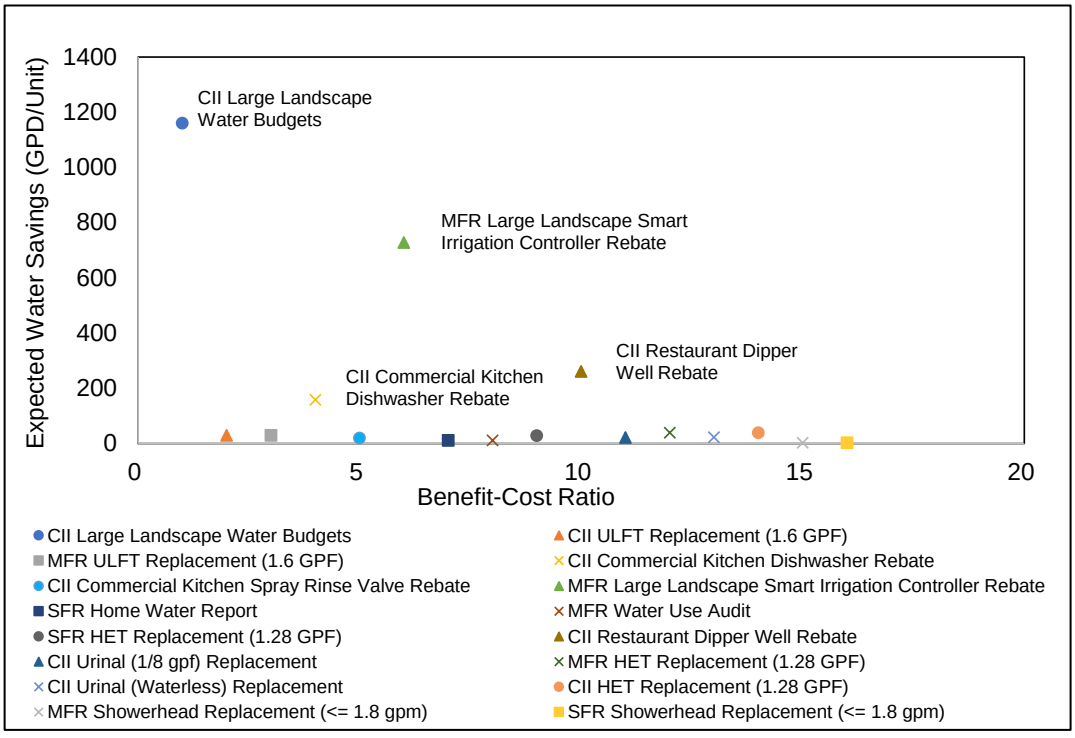


Figure A 3. Benefit Cost Ratio Versus Expected Water Savings

Table A 5. Plan C Water Conservation Measure Parameters.

Water Conservation Measure	Utility ($/Unit)	Quantity Year 1	Quantity Year 2	Quantity (Annual Thereafter)
SFR Home Water Report	$0.00*	250	250	250
SFR HET Replacement (1.28 GPF)	$100.00	100	100	-
SFR Showerhead Replacement (<= 1.8 GPM)	$0.00**	50	50	50
MFR Water Use Audit	$0.00*	250	250	250
MFR HET Replacement (1.28 GPF)	$100.00	44	44	-
MFR Showerhead Replacement (<= 1.8 GPM)	$0.00**	10	10	10
MFR Large Landscape Smart Irrigation Controller Rebate	$700.00	8	8	-
CII HET Replacement (1.28 GPF)	$100.00	70	70	-
CII Urinal (1/8 GPF) Replacement	$100.00	20	19	-
CII Commercial Kitchen Spray Rinse Valve Rebate	$0.00**	20	20	20
CII Restaurant Dipper Well Rebate	$150.00	7	7	-
CII Large Landscape Water Budget	$250.00	20	20	-

*SFR Home Water Report and MFR Water Use Audits set to $0.00 because this is a standard service that Water Resources staff provides the community.
**Price set at $0.00 because the measure is included in the standard $5,000 annual complimentary water conservation item budget.

	Active	Passive
Year 1	49	0
Year 2	69	1
Year 3	45	2
Year 4	46	2
Year 5	47	3
Year 6	47	3
Year 7	47	4
Year 8	47	5
Year 9	47	5
Year 10	47	6
Year 11	39	7
Year 12	30	7
Year 13	30	8
Year 14	30	9
Year 15	30	10
Year 16	29	10
Year 17	29	11
Year 18	29	12
Total	**739**	**105**

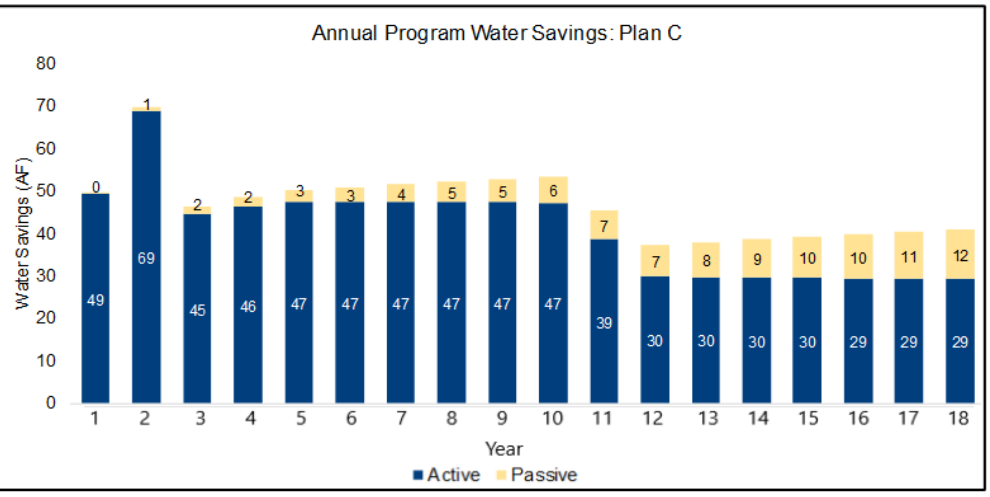


Figure A 4. Plan C Annual Program Water Savings.

Table A 6. Implementation Schedule.

Measure	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18
Public Information and Outreach																		
Ho																		
Lea																		
Plu																		
Co																		
Wa																		
Hig																		
Uri																		
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